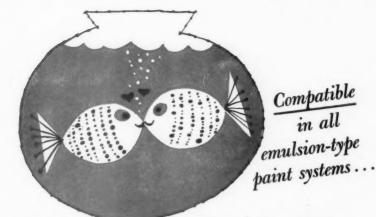
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ANTHONY ERRICO, Editor

ALAN P. DANFORTH

General Manager

A. L. BENDER

Production Manager

ABRAHAM MANN

Editorial Ass't.

MARY WILLIAMSON

Circulation Manager

PHILIP J. SEAVEY

Advertising Manager

DUNCAN P. MACPHERSON

700 S. Washington Sq. Philadelphia, Pa.

Philadelphia, Pa. LOmbard 3-9982

Advertising Representatives

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VOL. 47

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NO. 13

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MEMBER BUSINESS BPA PUBLICATIONS AUDIT, INC.

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made by Protex-A-Cote, Inc., Newark, New Jersey, to combat these corrosive conditions.

TIME: Fall of 1956. METHOD: Three coats of Epon resin-based Porselon were applied over an undercoat of zinc chromate Epon resin-based primer to form a 5-mil thickness. RESULT: An incredibly tough, acid-resistant surface which combines the advantages of a rugged baked film with the convenience of air drying. Porselon is easily applied with a brush, roller or conventional spraying equipment.

Paint users are rapidly becoming aware of the many advantages offered by Epon resin-based formulations . . . excellent adhesion, resistance to abrasion and impact, ability to withstand extremes of heat, humidity, and the attack of corrosive chemicals.

Steel clarifier at Trubek Laboratories is quickly coated with Porselon, an Epon resin-based paint, for maximum protection against corrosive acids.

Your Shell Chemical representative will explain how you can take full advantage of Epon resins in your paint and enamel formulations. Write for: "Epon Resins for Surface Coatings" and "Epon Resin Esters for Surface Coatings."

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Publicizing the Merits of Paint

THE merits of aluminum as a building material have been given widespread publicity over the past two years. Among the countless uses recommended for aluminum as a building material are windows, louvers, sidewalls, trim, roofs, ceilings, column sheaths, etc. Ease of installation, light weight combined with high strength have helped to generate considerable interest in this metal as a building material. The big claim made of aluminum—it never has to be painted.

This same claim is being expounded for plastics, ceramics, wall coverings, asbestos-cement products, etc.

President Battley of the National Paint, Varnish and Lacquer Association discussed these claims at great length in an address before the recent Federation meeting in Philadelphia. He said,—"As you know, there is a lot of discussion about the inroads made in our traditional markets by competitive materials—surface coating materials that are not products of our industry.

"All of use concerned with making, selling and using the products of the paint, varnish and lacquer industry, and in whatever capacity, must assume part of this problem as it affects the overall welfare of our industry. It is not difficult to find prophets of gloom who would have you believe that such competitive materials are

sounding the end of our industry as we know it. I do not agree with this belief. We are an alert and aggressive industry, we are making paints—and better paints—before most of these new-comers were ever heard of, and we will be making paints when they are not even a foot-note in the history book."

In this connection, President Battley announced the Association's plan of an expanded program designed to make the public more conscious of the merits of paints and allied This program will consist of incoatings. creased publicity throughout the country in all consumer publication fields such as newspapers and magazines, house organs of major industries and businesses, the development of feature stories for the various news and photo syndicates, the placement of material with nationally syndicated columnists, full cooperation with all trade and business publications of our customers' industries, and the promotion of the industry's paints and related products in the news. One of the main themes of this campaign will emphasize that paints can do the job better and cheaper.

The success of this publicity program will depend in a large measure on the cooperation and participation of all members of the coatings industry. Ideas and suggestions will be needed to insure effective results. Whatever ideas you may have, be sure and tell your Association of them.

AMOCO CHEMICALS-A NEW RESOURCE

80

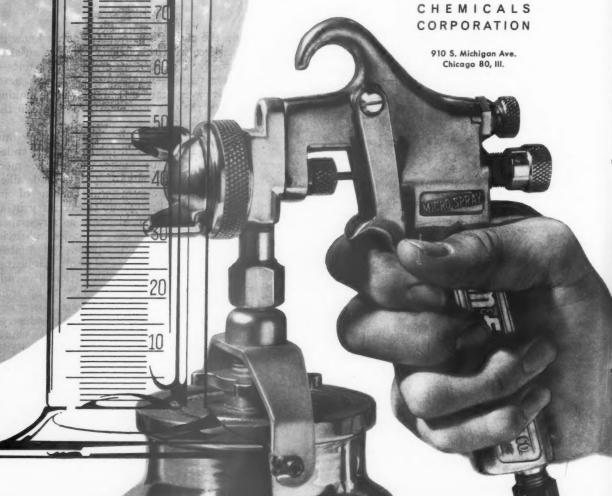
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Latex formulation pass this test?

Test result shows that paints based on Bakelite Brand WC-130 Latex assure better resistance to the effects of the borate found in tape joint sealing cements and flame retardent paint formulations.

How this test was made: Samples of a commercial latex paint and a paint based on BAKELITE WC-130 Latex were prepared and measured into separate beakers. Then equal amounts of a saturated borate solution were prepared and

BETTER RESISTANCE TO BORATE: test panel was treated with borate solution; then coated with 2 latex paints. Note how paint based on WC-130, at left, resists the unsightly effects of borate. The commercial latex paint tested at right, shows the agglomeration possible in paints unstable to borate. Tape joint cement containing a small amount of borate will cause a build-up of small particles in the heel of the brush that will produce an unsatisfactory finish.

added slowly to each beaker. In the commercial latex paint, coagulation occurred with less than 5 cc's of the saturated borate solution, while a full 10 cc's of the borate solution were added to the WC-130 Latex based paint with no evidence of coagulation.

THE QUALITY OF "BAKELITE" WC-130 LATEX

Better resistance to borate shown by WC-I30 Latex formulation

Resistance to "roping" over borate-treated joint-sealing compounds is important for complete customer satisfaction. To test for this sales benefit, a paint based on BAKELITE Brand Latex WC-130 was compared with a conventional latex paint. Results showed the commercial latex paint produced agglomeration in seconds. However, the paint based on BAKELITE WC-130 Later.

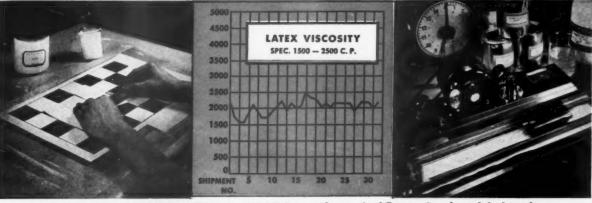
compared with a conventional latex paint. Results showed the commercial latex paint produced agglomeration in seconds. However, the paint based on BAKELITE WC-130 Latex accepted twice as much concentrated borated solution without any effect whatsoever. This stability assures a smooth finish over sealing compounds that contain borate...this means greater customer satisfaction (see test panel on

opposite page.) It also means fewer brush cleanings. Bakelite WC-130 Latex gives you many proven selling advantages. Better hiding power is possible ... a result of ability to take higher pigment loading. Finished surfaces look better, are better, because of better color and sheen uniformity. Excellent tube color acceptance assures a wide range of decorator colors. And, fast drying means good scrub resistance after only 24 hours. These sales features are proven ... in laboratory and field tests across the country. Today, take advantage of the superiority of formulations based on Bakelite WC-130 Latex.

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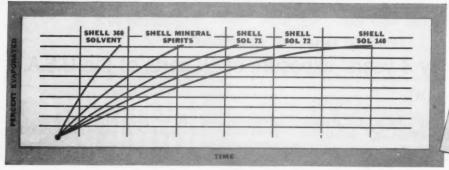


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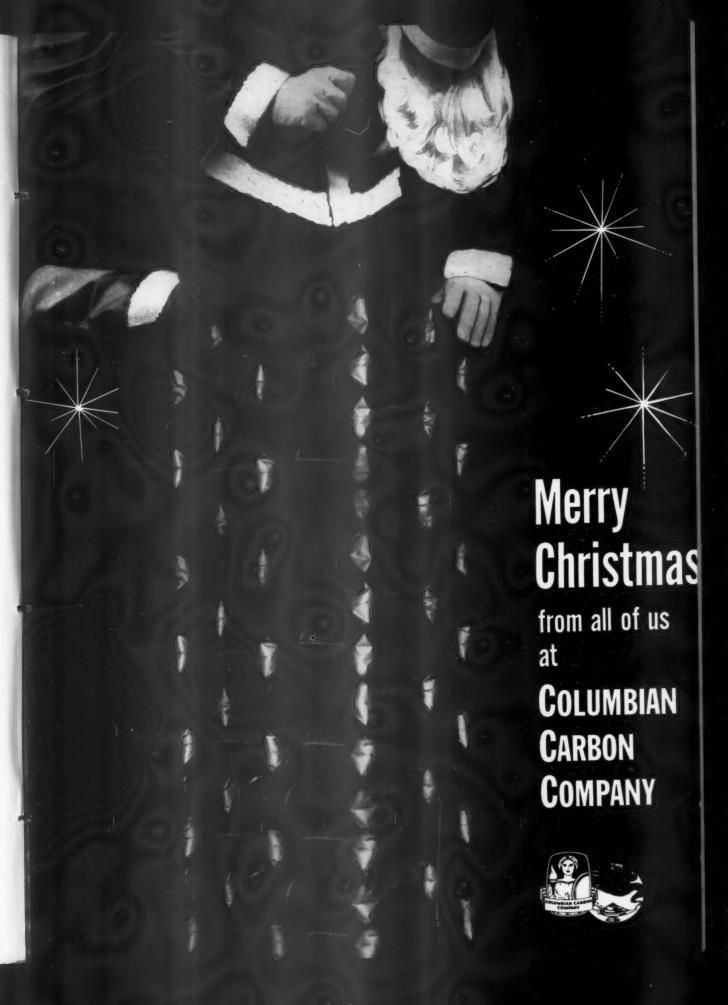




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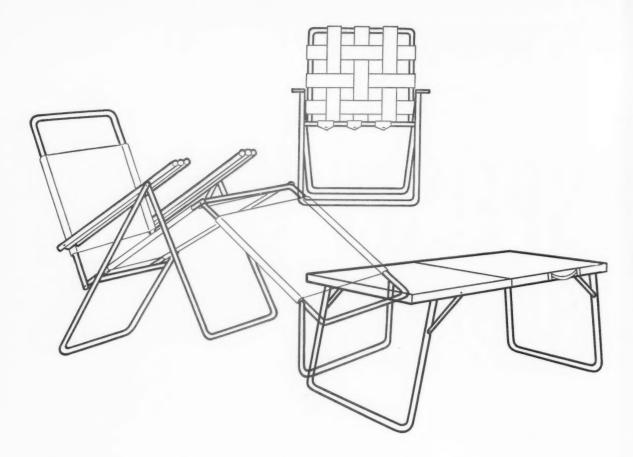
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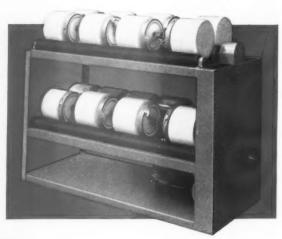
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	h me free sample of new POLYCO 806 (and YCO 688) together with technical bulletin.
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Greater Capacity Maximum Flexibility in LIMITED SPACE

"U.S." LONG-ROLL JAR MILLS

"U. S." Long-Roll Jar Mills are specially engineered to make most efficient use of valuable floor space. Their greater capacity and flexibility make it possible to expand substantially your milling facilities within virtually the same floor area as occupied by other models.

These units have sturdy welded steel frames built for long, dependable service under rigorous operating conditions. The 3" diameter parallel-ground rollers are made of long-wearing chemical- and solvent-resistant Neoprene rubber. Heavy-duty motors and drives assure ample power.



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Special features:

- 3-position adjustment handles jars 2" to 15" in diameter.
- Free-turning, ball bearing jar stops
- Lifetime lubricated and sealed bearings.

FULL RANGE OF SIZES

Available with two or three rolls; single or multiple tiers; roll lengths from 16" to 72". Wide choice of optional equipment including cabinets, casters, automatic timers, tachometers, clutches and drives.

- HANDY HINTS on Jar Milling

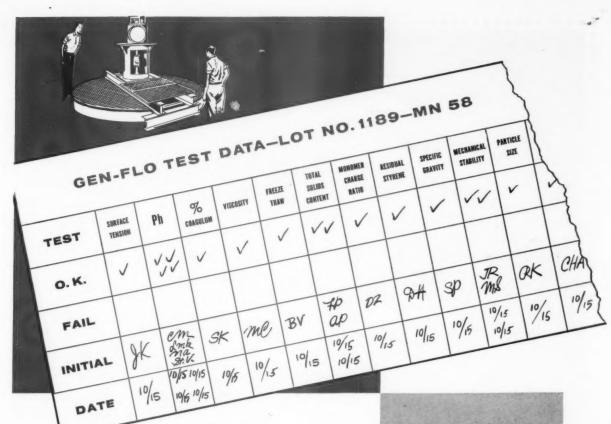
If bending or breaking jar lid locking bars constitute a problem, check for hardening of the gaskets. Should be soft enough to indent with fingernail (about 30 Durometer).

For additional helpful grinding and mixing data plus full details on "U. S." Jar Mills WRITE FOR BULLETIN 280.

PROCESS EQUIPMENT DIVISION

U. S. STONEWAR

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15 TESTS

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PACTS YOU SHOULD KNOW ABOUT GEN-FLO

Available in shipments tailored to your operation, Gen-Flo offers these physical characteristics:

Viscosity—cps. — 21

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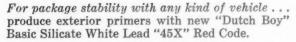




Want to solve this exterior primer problem...livering?

try new Dutch Boy® "45X" RE

(Basic Silicate White Lead)



This new product was especially developed by National Lead to solve the problems arising when highly specialized and new type primer vehicles are used.

Many years of tests have proved that "45X" Red Code promotes high package stability. "45X" Red Code imparts exceptional blister-resistance.

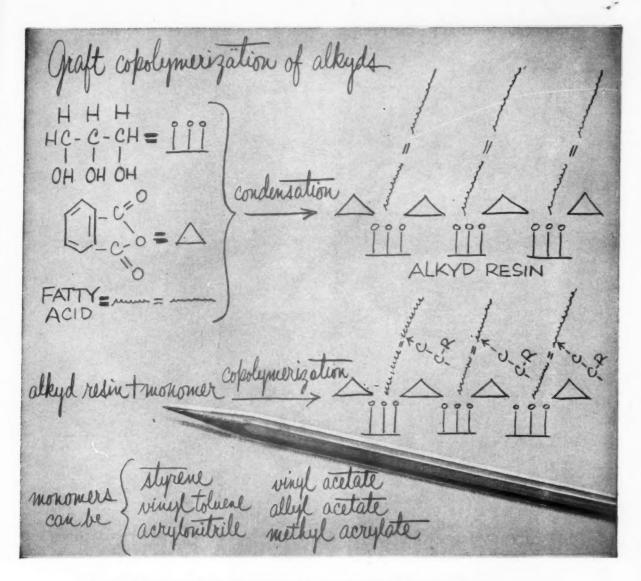
The new "45X" Red Code also provides a fine balance of other properties paint users look for in primers. The lead soaps produced in the paint formulation through its use contribute greater adhesion. Furthermore, "45X Red Code imparts to the film the degree of water resistance necessary to maintain the adhesive bond.

Besides all these consumer benefits, this new product also offers all the production economies manufacturers have come to expect from "Dutch Boy" Basic Silicate White Lead "45X".



NATIONAL LEAD COMPANY:

New York 6; Atlanta; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; Dallas 2; Philadelphia 25; Pittsburgh 12; St. Louis 1; San Francisco 10; Boston 6 (National Lead Co. of Mass.); In Canada; Canadian Titanium Pigments Ltd., 630 Dorchester Street, W., Montreal.



Better copolymers come easy when you use <u>Glycerine</u> alkyds

Glycerine alkyds react well with a great variety of monomers. They yield interesting copolymer vehicles that give coating manufacturers a whole new spectrum of properties to work with.

Glycerine alkyds, because they have less tendency to gel during cooking, permit far more flexibility in the condensation process. And the resulting copolymers are more soluble, have better clarity and do not haze as readily as those based on other polyols.

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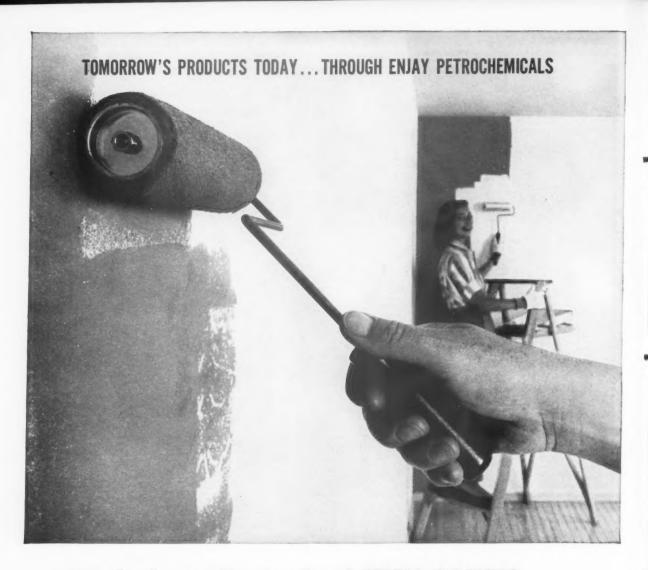
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As year after year proves, nothing takes the place of Glycerine.

Glycerine Producers' Association

295 Madison Avenue, New York 17, N. Y.

Nothing takes the place of Glycerine



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With the modern trend of "do-it-yourself," easy-to-apply latex paints are a growing favorite with today's home-owners. Increased competition for a share of this rapidly expanding market makes it essential for manufacturers to obtain top-quality raw materials for their products.

Enjay Butadiene, like all Enjay petrochemicals, meets rigid specifications for purity and uniformity and is excellent for the manufacture of high-quality latex paints.

For technical assistance in the application of Enjay Butadiene or any other of the many Enjay petrochemicals to *your* product, the recently expanded Enjay Laboratories offer the industry's most modern testing and research facilities. Write or phone for complete information.

Enjay offers a widely diversified line of Petrochemicals for industry:

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STYRENE-BUTADIENE LATEX for INDUSTRIAL FINISHES

Unique property of this particular latex is its ability to convert from a somewhat tacky material to a hard, highly thermosetting type resin for application on metal.

ATEX paints were first introduced to the consuming public some ten years ago. During this ten year span the technology of latex emulsion systems has expanded tremendously as evidenced by their acceptance for both interior and exterior use. Last year latex emulsion-based production amounted to 54 million gallons, a strong indication that emulsion systems have established themselves firmly in the trade sales field.

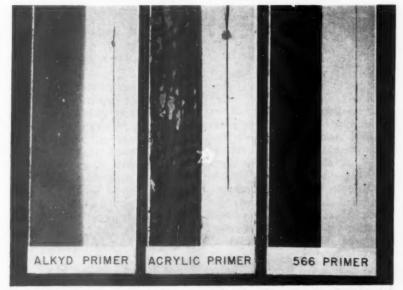
Another major area where latex systems are making considerable progress is in the industrial field. In recent months, several producers have offered emulsion vehicles for formulating primers and gloss finishes. For the automobile and appliance manufacturer, water-thinned finishes have one big advantage-elimination of fire hazard on the finishing line.

In this connection, the *Dow Chemical Company* is now offering a styrene-butadiene latex (Latex 566) developed specifically for baked metal coating application.

Latex 566 is a stable, colloidal dispersion of high molecular weight styrene-butadiene resin particles in water. At room temperature the emulsion forms a slightly tacky film which, when baked under the proper conditions, becomes a tackfree, hard, glossy, tough film strongly adherent to almost all surfaces.

Heat and catalysts play an important role in the development of successful films with the new

latex emulsion. At the pH of $4.0\pm.5$ at which the latex is supplied, a sufficient flow of iron ions is created from an iron-bearing surface to catalyze the butadiene dcuble bond, resulting in a thermoset, cross-linked structure.



Results of typical tests comparing Latex 566 with other primers. Panel at left has been coated with alkyd primer of commercial automotive type: bake-30/275; topcoat-commercial automotive enamel; salt spray-340 hours. Center panel has been coated with acrylic latex primer: bake-30/360; topcoat-commercial automotive enamel; salt spray-340 hours. Panel at right has been coated with Latex 566: bake-30/325; topcoat-commercial automotive enamel; salt spray-340 hours. Note excellent resistance to creepage and loss of adhesion at the scratch mark on Latex 566 panel. Left side of panel shows resistance to corrosion by primer without topcoat enamel.

	,	///	10	/	250 °F	/30'	/	275°F	/30	/	350°F	/15'
/.	SAMPLEN	* Calaus (A)	50,105	MIN SO	1, 1831 (1) 1, 180 (1) 1, 180 (1)	25° 118° 5	MIN SO	1502	" KESIST	MIN SP	1,505,	50.80
1	3.0	NONE	2 H	OK	FAIR	5 H	OK	FAIR	6 H	ОК	GOOD	1
2	4.0	NONE	4 H	OK	F-G000	5 H	OK	GOOD	5 H	OK	GOOD	2
3	5.5	NONE	Н	FAIL	V. POOR	2H	FAIL	V POOR	5 H	OK	F-G000	3
4	8.0	NONE	HB	FAIL	V. POOR	H	FAIL	V POOR	H	SL FAIL	F-600D	4
5	4.0	.EMn	4 H	OK	F-G000	4 H	OK	GOOD	4H	OK	GOOD	5
6	4.0	.2 Mn	4H	OK	F-6000	4 H	OK	GOOD	4 H	OK	V GOOD	6
7	4.0	.1 Co	4H	OK	GOOD	4 H	OK	G000	4 H	OK	GOOD	7
8	4.0	.2 Co	5H	OK	GOOD	5 H	OK	V GOOD	5H	OK	V GOOD	8
9	8.0	.04 Co	H	FAIL	V. POOR	2 H	FAIL	V POOR	4 H	OK	GOOD	9
10	8.0	.1 Co	H	OK	GOOD	2 H	OK	V. GOOD	4 H	OK	V. GOOD	10
11	8.0	.2 Co	Н	OK	G000	2H	OK	V. G000	4 H	OK.	W GOOD	11
12	8.0	.04/.4 Co/Pb	н	OK	GOOD	2H	OK	GOOD	4 H	OK.	GOOD	12
13	8.0	.04 Mn	нв	FAIL	V. POOR	2 H	SL FAIL	V POOR	4 H	OK	GOOD	13
14	8.0	.I Mn	H	OK	F-GOOD	2 H	OK	GOOD	4 H	OK	V GOOD	14
15	8.0	.2 Mn	2 H	OK	F-GOOD	2H	OK	GOOD	4H	OK	V 6000	15
16	8.0	.1 Zn	В	FAIL	V. POOR	H	FAIL	V POOR	4 H	OK	GOOD	16
17	8.0	.2 Zn	В	FAIL	V. POOR	H	FAIL	V POOR	44	OK	6000	17
18	8.0	.04 Co (2)	HB	FAIL	V POOR	H	FAIL	V. POOR	4 H	SL. FAIL	FAIR	18
19	8.0	.1 Co (2)	2 H	OK	F. G000	2H	OK	GOOD	4 H	OK	G000	19
20	8.0	.2 Co (2)	2 H	OK	GOOD	3 H	OK	G000	4 H	OK	GOOD	20
21	8.0	.05/.15 Co/Ph.(3)	Н	ОК	FAIR	н	ОК	GOOD	4 H	ОК	6000	21
22	8.0	.05/.15 Mn / Ph.(3)	F	ОК	FAIR	н	OK	FAIR	4 H	ОК	6000	22
23	8.0	.05/1.0 Co/BP(4)	F	SL. FAIL	POOR	н	OK	6000	411	СК	6000	23
24	8.0	.05/2.0 Co/DCP(5)	F	SL. FAIL	POOR	r	SL FAIL	FAIR	3 H	OK	6000	2.4

LEGEND:

- (1) METAL ADDED VIA ACETATE SALT EXCEPT 18,19,20.
- (2) ADDED VIA WATER DISPERSIBLE COMPOUND (CYCLODEX).
- (3) Ph.= I-10 PHENANTHROLINE
- (4) BP = BENZOYL PEROXIDE (5) DCP = DICUMYL PEROXIDE
- (6) PENCIL HARDNESS: 8 HB MED HARD
 - F → 2H HARD
 - 3H→6H V HARD
- (7) MINERAL SPIRITS: OK = NO CHANGE
 - SL. FAIL = SOFTENED
 FAIL = BADLY SOFTENED OR DISSOLVED

Table I. Catalysis of Latex 566 baked clear films on steel.

Catalysis

Films of the latex emulsion can also be catalyzed by the introduction of metal catalysts through their water scluble or water dispersible compounds. The metal catalysts become necessary when the substrate is iron-free, or when alkaline formulating conditions force the pH of the latex system into an alkaline range. To effect catalysis, either the water soluble acetate salts of cobalt and manganese, or the water dispersible grades of cobalt and manganese naphthenate are very satisfactory. Iron salts, though not as effective, may also be used.

Table I shows laboratory data on the catalysis of Latex 566 baked clear film on steel. The table illustrates the effect of various kinds and concentrations of catalysts on the films, at different pHs and at three temperature ranges. Hardness and resistance to mineral spirits and water were used as yardsticks in determining the degree of cure effected by the catalysts.

From the study illustrated in Table I are drawn the following conclusions: Catalysis by the iron substrate generally produces harder films at medium bake schedules than catalyzed alkaline films. At medium bake schedules, the pH should be kept below 5.0 for adequate catalysis by the substrate. A pH below 4.0 apparently gives no additional properties.

It is also concluded that introduction of metal catalysts at an acid pH does not produce any significant improvements over the straight iron catalysis. Cobalt metal at an alkaline pH appears to give better water resistance than a straight iron catalysis. Cobalt also appears to be more effective than manganese. The bake schedule required is inversley proportional

to the catalyst concentration.

Examination of film properties of the latex emulsion revealed that films became extremely hard on baking and were somewhat inflexible, but in all cases they showed excellent adhesion to the base metal under stress of the 1/8-inch bend test. Although clear films showed poor impact resistance in some pigmented coatings, the impact resistance was generally improved. In the formulation of a coating for an automotive primer, impact resistance of the new latex emulsion is comparable to that of a standard alkyd primer.

Compatibility

Table II indicates the compatibility of Latex 566 with various latexes and emulsions. It was found that the following modifiers made these improvements in the film properties of the latex emulsion:

A micro-crystalline wax imparted mar resistance to baked coatings when employed at a concentration of approximately five per cent wax based on latex solids.

A polyvinyl chloride latex improved the water resistance and reduced the tack of air dried coatings.

An emulsified alkyd tended to improve the impact resistance of baked coatings.

A resin emulsion improved the water resistance and hardness and reduced the tack of air dried coatings, and improved the impact resistance of baked films.

Pigmentation

Many of the pigments used in other latex paints and in resin solution paints can be used with the new latex emulsion. But because latex formulations can include so many variables, all pigments and pigment combinations should be checked under specific formulating conditions.

Any pigment selected should be stable within the pH range of the paint, and it should not be a source of excess polyvalent ions which could cause latex instability. In laboratory studies, the new latex emulsion has shown a fair tolerance for the polyvalent metal ions of

calcium, aluminum, zinc, and others which may be present in the water solubles of a pigment. Tolerance can be increased further by the addition of surface active agents, preferably non-ionic, either to the latex prior to mixing in the pigment dispersion, or to the final paint, depending upon the specific conditions.

Another consideration in the selection of a pigment is the effect of water soluble salts within the pigment on the pH of the paint. If a Latex 566 paint in the range of pH 4 to 5 is desired, pigmentation with low water soluble content materials is suggested. Once the pH is raised by pigment impurities, it may be difficult to lower the pH with acids.

Of the white hiding pigments, rutile TiO₂ is by far the most effective. Lithopone can be used under most conditions, but usually with TiO₂ to provide adequate hiding. There are many extender pigments that can be used, including clays, magnesium silicates,

calcium carbonates (water washed), silica, diatomaceous silica, mica and barytes. In selecting an extender pigment, consideration should be given to the impurities present.

In selecting a color pigment for use with the new latex emulsion, one can choose from three types: dry pigments used in oil paints, aqueous pigment dispersions, and treated dry pigments for latex use. Both inorganic and organic pigments are available in each of the above types for use in latex paints.

Some of the inorganic pigments that can be used under the proper conditions of formulation are: iron oxides, natural and synthetic; burnt sienna; burnt umber; ultramarine blue; cadmium red, oranges and yellows; chromium oxide hydrate; zinc oxide, and zinc chromate.

Organic pigments that may be used are: naphthol red, toluidine red, phthalocyanine blues and greens, pigment green B, carbon black and hansa yellow.

Zinc chromate and zinc oxide can be used with the new latex emulsion up to 25 per cent of the pigmentation, but additional surface active agents must be added to the latex to prevent coagulation.

Additives

Pigment dispersants, thickeners and defoamers are important additives in the formulation of a latex paint. The necessity of satisfactory dispersion of the pigments calls for the inclusion of a dispersing agent in all formulations. Anionic dispersing agents are suggested for use with pigments in a Latex 566 base paint.

Synthetic colloidal thickeners are satisfactory for most purposes with the new latex emulsion. In that class are methylcellulose, carboxymethylcellulose and salts of polyacrylic acid. Because of the great variety of formulating conditions, it is necessary to check the thickener under specific conditions of use.

Another class of thickening agents that appears to have merit is the inorganic gelling agents. Added into the paint grind, they measurably improve pigment suspension. Extremely thick pastes utilizing gelling agents, however, should be avoided because their addition to the latex increases the tendency of pigments to flocculate.

During the mechanical agitation which accompanies paint processing and application, latex paints have a tendency to foam. The problem is eased by the proper selection and use of defoaming agents.

The pH of the new latex emulsion can be adjusted very simply by the proper choice of acid and alkali. Acetic acid (five per cent) is generally recommended because of its volatility and its lack of permanent water sensitive components. For neutralization, ammonia can be employed and is recommended over the use of alkaline sodium salts.

The pigment in a latex paint is normally dispersed in water and wetting agent. The latex vehicle is not used in pigment dispersion because coagulation of the latex could result from severe agitation and shear during the mix. Any of the following may be used for pigment dispersion: pebble mill,

MODIFIERS	TYPE		IR DRY		BAKE 30 MIN./275°F % MODIFICATION			
		25%	50%	75%	25 %	50%	75%	
RHOPLEX WN - 75	ACRYLATE LATEX	1	1	1	1	1	1	
RHOPLEX WN -80	ACRYLATE LATEX	I-C	1-C	I-C	I-C	I-C	I-C	
RHOPLEX AC-33	ACRYLATE LATEX	1-C	1-C	1-C	I-C	I-C	I-C	
DOW EXP LATEX X-2700	POLYVINYL CHLORIDE LATEX	C	C	Î.	c(1)	C(1)	C(1)	
SARAN LATEX F-122-A15	VINYLIDENE CHLORIDE — ACRYLONITRILE LATEX	С	1-C	1-C	С	С	С	
DOW LATEX 744-B	VINYLIDENE CHLORIDE - VINYL CHLORIDE LATEX	C	С	1	С	1-C	С	
RESYN 12K55	POLYVINYL ACETATE LATEX	1	1	1	1	1	1	
DOW LATEX 762-W	STYRENE/BUTADIENE LATEX	C	C	C	c	C	C	
DOW LATEX 512 - R	STYRENE / BUTADIENE LATEX	C	C	C	C	C	C	
DOW LATEX 580	POLYSTYRENE LATEX	C	1-C	1	C	C	C	
PICCOPALE A-I	HYDROCARBON EMULSION	I-C	1-C	C	I-C	I-C	1.0	
VINSOL EMULSION	RESIN EMULSION	1-C	1-C	1	I-C	I-C	I-C	
REZAMUL 1504	EMULSIFIED ALKYD	0	0	C	C	C	C	
PM - 353	EMULSIFIED ALKYD	I-C	I-C	I-C	I-C	I-C	I-C	
		5%	10 %		5%	10%		
DISPERSION 33	SYNTHETIC WAX EMULSION	1-C	1-C		С	С		
CEREMUL R	MICROCRYSTALLINE WAX EMULSION	I-C	1-C		C	I-C		
CEREMUL C	PARAFFIN WAX EMULSION	1-C	1-C		C	C		
A-C POLYETHYLENE No.629A	POLYETHYLEN'S EMULSION	C	C		C	I-C		

LEGEND .

C - COMPATIBLE - CLEAR FILM; I-C - PARTIALLY COMPATIBLE - SLIGHT HAZE OR WHITENING;

I - INCOMPATIBLE - OPAQUE FILM

(1) FILMS BAKED 30 MIN. / 375°F

Table II. Compatibility of Latex 566 with various latex and emulsion systems.

three-roll mill, high-speed mill, stone mill, colloid mill or a *Kady* Mill. A change can or similar mixer may be used for pre-mixing, if necessary.

In using a three-roll mill, sufficient thickener must be included to provide viscosity and tack for efficient dispersion. The amount of water is important to get the body required and to satisfy the final water demand of the pigment combination. A very thick paste, in which water demand is not satisfied, could cause instability when mixed with the latex.

The pigment dispersion is "let-down" with the latex and other necessary ingredients. The total mix is then agitated slowly to prevent the development of foam. The latex should be screened prior to being mixed with the pigment dispersion. Resin lined or stainless steel equipment should be used to prevent rusting, and the paints should be stored in resin lined cans or drums.

Latex 566 and paints made from it should not be subjected to extremes of temperature. Freezing temperatures cause latex instability.

The basic properties of the new latex emulsion suggest utility in many types of industrial finishes for metal. Latex paint formulations will probably be used as both primers and one coat protectors for such items as automobiles, file cabinets, auto under-hood areas, and bedsprings, etc.

Table III represents a typical iron oxide automotive primer formulation based on Latex 566. A formulation for black gloss enamel using this experimental latex emulsion is given in Table IV.

Trade-Name List

Rhoplex	Rohm & Haas Co.
Saran Latex F-122-A15	Dow Chemical Co.
Resyn 12K55	National Starch Products Inc.
Piccopale A-1	Penn. Industrial Chemical Corp.
Vinsol Emulsion	Hercules Powder Co.
Rezamul 1504	. Reichhold Chemicals, Inc.
PM-353	. Reichhold Chemicals, Inc.
Dispersion 33	. Baker Castor Oil Co.
Ceremul	. Socony-Vacuum Oil Co., Inc.
A-C Polyethylene 629A	Semet Solvay Petro Chem- ical Div., Allied Chemical and Dye Corp.
Tamol 731	. Rohm & Haas Co
Ben-A-Gel	. National Lead Co.
Surfynol 102	. Air Reduction Sales Co.
Triton CF-10	. Rohm & Haas Co.
Methocel	. Dow Chemical Co.

Pigment Dispersion:

	per 100 Gallons
Water	103.0
Tamol 731 (25%)	3.0
Pure Red Iron Oxide	69.0
China Clay	69.0
Barytes	138.0
Ben-A-Gel	.75
Surfynol 102 (20% in EtOH)	1.5
Grind through Morehouse Mill to fineness of 5 - 6	
Let Down:	
Experimental Latex 566 (46% N. V.)	588.0
Triton CF-10 (50% N. V.)	5.5
Water Dispersible Manganese (5% Metal)	6.0
	983.75

Approximate Pounds

Formulation Constants:

		Iron Oxide	25%	
	Pigment:	China Clay	25%	
		Barytes	50%	
	Binder:	Experimental Latex		
		566	100%	
Pigment/Binder, by weight Solids by weight Weight per gallon (lbs.)		der, by weight	1/1	
		ight	56%	
		9.9		
Viscosity #4 Ford Cup (sec.)		13.0		
pH (Adjusted with NH4OH)		9.0		
	Manganese M	Ietal/Latex Solids	.1%	
		TILL III I O	I. A. A Alexander Determination	

Table III. Iron Oxide Automotive Primer.

Manufacturing Notes:

Add the latex to the pigment dispersion followed by the Triton CF-10. After the Triton CF-10 is thoroughly mixed in, add Manganese Acetate.

Application:

The above formulation should be applied by spray to a dry film thickness of 1.8 - 2.2 mils for adequate corrosion resistance. Use Bonderized steel. Bake at 275°F/30′ and wet sand with #320 sandpaper. Apply topcoat enamel and bake at recommended temperature.

	Approximate Pounds per 100 Gallons
Experimental Latex 566 (46% N. V.)	788
Carbon Black Dispersion (20% N. V.)	36
Water Dispersible Cobalt (5% Metal)	7
50 cps. Methocel (3% N. V.)	18
Citric Acid (10% N. V.)	2
	851

Formulation Constants:

Pigment:	Carbon Black	100%	
Binder:	Binder: Experimental Latex		
	566	100%	
Pigment/Binder by weight		1/50	
Solids by we	ight	44%	
Weight per gallon (lbs.)		8.5	
Viscosity #4	Ford Cup (sec.)	14	
pH (Adjuste	d with NH4OH)	9.0	
Co. Metal/L	atex Solids	.1%	
	Table IV.	Black Gloss Enamel.	

Manufacturing Notes:

Disperse the carbon black dispersion in the latex with mild agitation. Adjust the pH to 9.0 with $28\%~{\rm NH_4OH.}$

Application:

Spray on steel. Allow to dry 15' and bake at 300-320°F for 30'.

Exterior paints made with **Lytron*** **680** tested in 14[†] climatic areas for past 2 years...

These full-scale house exposures were made on cement asbestos shingles, wooden sash and trim, chalking stucco, cedar clapboard, cedar shingles, cement block, painted and unpainted brick. Paint used was made in commercial plants in production size batches, and applied by professional painters and home owners.

Results: smooth flexible films, even when applied at temperatures below 40°. Early moisture resistance. No rupturing on porous substrate. No color mottling or spotting. Minimum blistering over green masonry.

Excellent adhesion, color retention, alkali-resistance.

Conclusion: Paint manufacturers can produce and sell exterior paints made with Lytron 680 (acrylic type polymer) that are easier to use under a wider variety of conditions than is now possible with any other currently available binder.

Write for working samples, prices, and technical booklet, to Monsanto Chemical Company, Plastics Division, Surface Coating Resins Department, Springfield 2, Massachusetts.

RESULTS: Excellent, everywhere!

†Phoeníx, Ariz.; San Diego, Calif.; Santa Clara, Calif.; Fort Lauderdale, Fla.; Soda Springs, Idaho; Chicago, Ill.; Wichita, Kans.; McKinley, Me.; Springfield, Mass.; Fargo, N. D.;
Nashville, Tenn.: Tenns City, Tenns: Sentlle, Wash.; St. Alphonse, Quebec, Can.



can be formulated at PVC's approaching those of alkyd flats..

superior low-temperature film coalescence—even below 40°F..

superior pigment wetting ability...

extremely fine particle size...

tough, flexible, weather-resistant films...

crystal-clear, water-resistant films...



listen

You can get High Quality* in low-cost paints and still work at rock-bottom cost!



HQ*Celanese PVAc Emulsions give you the High Quality* you need to make better paints PLUS important cost and production economies!

HQ*...High Quality Celanese CL-102 Homopolymer and CL-202 Copolymer boost the quality of low-cost vinyl latex paints, and at the same time, push their costs way down. Paints produced with these new low-cost HQ*Celanese Emulsions are outstanding in quality and production economy, regardless of the type or price of emulsion used.

Consider these HQ*advantages:

Celanese emulsions produce tough, flexible, weatherresistant paint films that maintain their integrity, even after being immersed in water... they exhibit superior pigment binding capacities, with critical PVC's even higher than linseed oil... their fine particle size is the key to good tint retention and resistance to chalking, long required by the industry for more serviceable vinyl latex paints.

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Ventilators were painted in April, 1953 and were in the condition shown in June, 1956.



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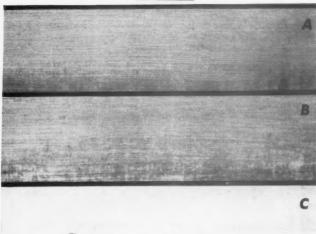
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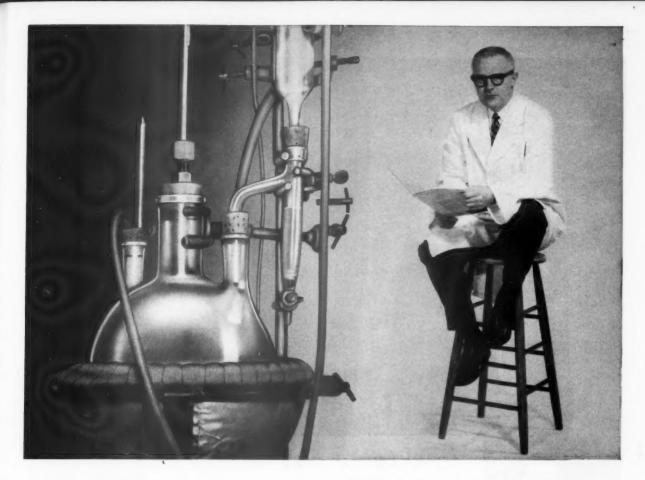
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BEHAVIOR OF CELLULOSE NITRATE and FINISHES

LIGHT

By John A. Parkins*

NCREASED light stability is generally desired for polymers used for films and finishes. This discussion summarizes some of the results from the initial part of a program at this Laboratory to elucidate the behavior of cellulose nitrate in light with the ultimate objective of effecting superior properties and

performance of this polymer.

Cellulose nitrate is one of the oldest chemically modified polymers now in general use as a resinous base for finishes, films, and plastics, and after many years and in the face of competition from new synthetic polymers, it continues to hold its popularity due to several outstanding properties. These properties, such as its toughness, its thermoplastic nature which allows it to be buffed and polished to a very high gloss, and its lack of plastic memory which assures dimensional stability of molded objects and embossed effects on coated fabrics, are almost without parallel in its field. In view of these superior physical properties, efforts in the past have been largely directed toward improvements in light stability and a considerable background in this phase of the technology has been accumulated.

In the early stages, when photochemistry was in its infancy, efforts were largely empirical, in which various additives were tried on the basis of experience gained after prolonged exposure to the weather. Naturally, the time required for results limited the speed with which interesting leads could be pursued and slowed the advance of the technology. More recently, accelerated tests were developed which employed artificial light and the other conditions of weather such as water sprays. Here again, conclusions were based upon the performance of the nitrocellulose composition, and, as often as not, the behavior of a product in use did not correlate well with accelerated aging in the laboratory or test station.

A more fundamental approach using the analytical techniques of the photochemist developed later. For

the most part, this involved determination of the final products or residues after long exposure to light, or to light and the other elements of weather, such as oxygen and moisture. The results of this almost exhaustive degradation were employed to postulate a mechanism for the breakdown.

In the present work, it appeared that a means of further value in defining more clearly the action of light on nitrocellulose would be to study its behavior from the earliest detectable effect of light, through each of any following physical and chemical changes to the final degradation products. Such a study might provide valuable clues to transient and active species which occur as intermediates and provide the basis for prescription of new and more effective means to inhibit the over-all degradation. Further, the chemistry of the process which could be elucidated might provide the basis for novel modifications of the physical properties of nitrocellulose compositions.

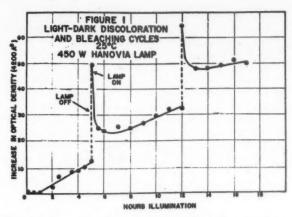
It has long been know that yellowing is one of the first signs of the action of light on nitrocellulose. Thus, in the initial part of this program, interest was directed toward yellowing, the conditions which control it, and the manner in which it is related to changes in other physical properties which are observed. Results obtained from this study are employed to propose a mechanism for the degradation of nitrocellulose in light to assist in elucidating the chemistry of the process.

Most of the following observations were made on nitrocellulose solutions, since work with solutions was found somewhat more convenient and precise than Concentrations of solutions could be with films. controlled more easily than the thickness of films: also color and viscosity determinations on solutions were more reliable than color and tensile strength measurements on films. In general, however, similar effects were observed in films as reported here for solutions.

Yellowing and Bleaching

It became apparent early in these studies that the extent of yellowing depended upon the continuity of

^{*}Burnside Laboratory, E. I. du Pont de Nemours & Co. This paper was presented before the Industrial Product Finishes Technical Committee Meeting of the National Paint, Varnish and Lacquer Assoc, in New York City on May 15, 1957.



illumination. In the initial period of illumination, solutions of nitrocellulose vellowed at a steady state, as shown in Figure 1, and after illumination ceased yellowing continued at a comparable rate. vellow was bleached upon resumption of illumination. This behavior was true in the light from two different sources of ultraviolet light employed: a commercial 275-watt sun lamp, and a 450-watt Hanovia medium pressure mercury arc. Differences in the initial rate of yellowing, and the amplitude of the bleaching phase were attributed to differences in the distribution of the light energy in the ultraviolet spectrum of the two sources. This is shown in Figure 2. It is significant that the sun lamp, which has lower over-all intensity but with the greater part of its ultraviolet output in the longer ultraviolet region, actually pro-

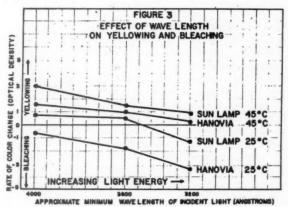
	FIGUR	E 2	
	ENERGY DISTR SOURC FROM GENERAL ELECT TECHNICAL BUL	ES TRIC AND HANOVIA	.IGHT
	PERC	ENTAGE TOTAL	INPUT
SPECTRAL RANGE ANGSTROMS	HANOVIA TYPE L	SUN L AMP	HANOVIA H-2

duces a greater rate of yellowing. These results indicate that concurrent reactions, competitive so far as color is concerned, are taking place. It appears that the color bodies resulting from the initial reaction which can take place in the lower energy, longer wave-length ultraviolet light are destroyed by the higher energy light from the shorter wave-length region.

Wave-Length Dependence

The wave-length dependence of the behavior of nitrocellulose in light was investigated further. It was not practical to use monochromatic light at various wave lengths, due to low intensities obtainable with available equipment and the prohibitively long exposure periods required; hence, filter systems were employed which limited the light to the region

of the spectrum at wave lengths longer than the cutoff, or the opaque region of the filter. Aqueous solutions of sodium nitrite and ferric ammonium sulfate were interposed in place of water between the light source and the nitrocellulose solutions. These salt solutions limited the light in each case to a minimum wave length of 4000Å and 3600Å, respectively, while the pure water transmitted to beyond 3200Å, the limits imposed by Pyrex glass and the effective output of the lamps. Figure 3 shows the relative rates of the initial reaction (coloring or bleaching) on exposure to the different light sources. It can be seen that, in spite of lower over-all intensity, the maximum yellowing rate occurs in light of longer wave lengths, and that shorter wave lengths cause bleaching of the inherent color of the solutions. Further, it can be observed that yellowing is favored by higher temperatures.



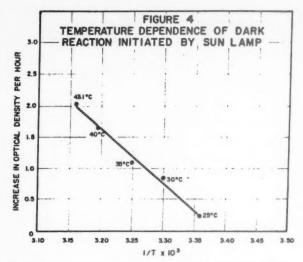
Temperature Dependence

A significant feature of the yellowing and bleaching in the light and dark sequence is the prolongation of the yellowing process long after illumination has been discontinued. From this, it appears that a color-producing step following the primary photochemical action is rate controlling in the degradation sequence. A study of the latent activity would provide an insight into the nature of this chromophore formation.

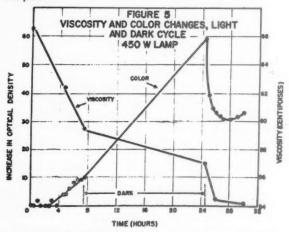
The rate of diffusion of an active intermediate to a reactive site was considered as a possible limiting factor in the slow reaction and prolonged activity following the primary photochemical step. If so, the rate of color formation in the dark following an initial activation by light should be a function of the square root of the absolute temperature (1). On the other hand, if simple reaction kinetics prevail, the Arrhenius relationship ($\log k = f(1/T)$) should hold. Experiments run at several temperatures (every 5°C from 25°C to 45°C, inclusive) showed a regular dependence in the reciprocal relationship as shown in Figure 4. The temperature dependence of the rate can represent the additional energy of activation of the secondary reaction following photochemical activation. Primary photochemical effects are usually independent of temperature, with activation provided by the light energy.

Yellowing/Bleaching Processes

Along the path from the initial action of light on the nitrocellulose, through the yellow intermediate,



to the final residue, degradation of the cellulose chain occurs. To determine how yellowing and bleaching and the light/dark sequence are related to this degradation, solution viscosities were determined at significant points on the path in the light and dark sequence. Figure 5 shows that there is a regular loss of viscosity during the steady-state yellowing in the light, but very little in the dark period during which much color developed. The greatest rate of viscosity loss occurred during the bleaching part of the sequence. This suggests that little degradation of the cellulose chain is associated with discoloration, but that degradation is a result of decomposition of the colored component.



Unsupported films, which show the yellowing in the dark but upon which reliable color measurements could not be obtained, were unable to support themselves and collapsed on prolonged (ca. 50 to 60 hours) exposure to ultraviolet light. This corresponds to considerable degradation of the cellulosic chain and is comparable to checking of a finish on a surface.

Proposed Mechanism

These results provide a basis for the proposal of the schematic path for the behavior of nitrocellulose in light as shown in Figure 6. First of all, discoloration in both light and dark indicates that yellowing is not the primary reaction. It appears, instead, that the

primary photochemical step is the formation of the active species (NC*) which react under conditions of simple reaction kinetics to produce the color body. The first step, k, can be accomplished by moderately low-energy ultraviolet light, hv, with a wave length of 3600Å to 4000Å. The color bodies NCY, formed by k2, are destroyed by hv2 in k3 with a loss in viscosity and formation of the degraded residue NCX. This viscosity loss indicates that the yellowing and bleaching steps are not simple reversible reactions. Higher energy, hv2, of a wave length less than 3600Å is required to destroy the chromophore and cause chain scission. From this it can be seen that the degradation of the cellulosic chain can occur by the action of light alone. The other elements of weather, especially water or rain, cause the erosion of the surface and the well-known chalking of finishes. Checking, of course, could occur in the simple lightinitiated process outlined here.

FIGURE 6 REACTION SCHEME: BLEACHING / YELLOWING REACTIONS STARTING CELLULOSE NITRATE ACTIVE INTERMEDIATE DISCOLORED CELLULOSE NITRATE DEGRADED RESIDUE

These results, especially the slow and apparently rate-controlling, dark reaction, afford hope that new means can be developed to stabilize nitrocellulose, or to effect physical modifications of nitrocellulose systems. The long lifetime of the active species following the primary action of light provides an opportunity to employ additives which can reduce the potential to go, on to subsequent steps in the degradation path. Physical modifications of nitrocellulose might be accomplished by reaction of another component with the active system following illumination.

This mechanism provides a guide for further elucidation of the chemistry of the light-initiated degrada-Further experimental evidence at tion process. significant sites on the path, along with what is known of the slow thermal decomposition of nitrocellulose (2), the photolysis of alkyl nitrate esters (3), and earlier work on the photolysis of nitrocellulose (4) could reveal the true nature of the chemical reactions associated with the observed changes in physical properties. All of this is the subject of continuing work at this Laboratory.

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HIGHLIGHTS of the

35th Annual Federation Meeting

VER 3300 paint technologists from the nation and Canada gathered in Philadelphia, October 30—November 2, on the occasion of the 35th Annual meeting of the Federation of Paint and Varnish Production Clubs and the 22nd Paint Industries' Show. This registration represents the second largest attendance to convene at a Federation meeting, topped only by the 1956 meeting in New York which attracted over 3600 members and guests.

Mattiello Lecture

This year's Joseph H. Mattiello Lecture, a highlight of the technical sessions, was delivered by Dr. Albert C. Zettlemoyer, Professor of Chemistry, Lehigh University and Director of Research, National Printing Ink Research Institute. His topic was "Pigment Vehicle Interface".

The Pigment Vehicle Interface describes what happens at the surface where pigment and vehicle meet in paints and printing inks. This interaction and its influence on the product during manufacture and use is explained by studying the chemical and physical properties of several pigments and vehicles. Properties such as aging, flow, transfer, dispersion, and ultimate durability are influenced by this interface. The vital properties of paint and ink systems are born at the pigment vehicle interface. The importance of the interface can be readily appreciated when it is realized that the carbon black in a pound of news ink has



J. W. TOMECKO President

about six thousand yards (about one and one-third acres) of surface or interfacial area contributed by the carbon black.

Keynote Address

"Random Observations on Industrial Research" was the topic of this year's keynote speaker, Dr. Roger H. Lueck, Vice-President, Research and Technical Department, American Can Company

Dr. Lueck pointed out that the practice of research has undergone tremendous growth during the last quarter century. In 1930 about 500 million dollars were spent in the United States for research of all kinds. In 1956 this figure has skyrocketed to 7 billion dollars and represents a rate of growth that far out-paces the increase in the gross national product.

The reason for this growth, according to Dr. Lueck, is that when research is properly applied and conducted it can return a profit.

This is not to say that every research project proves profitable. Successful laboratories consider themselves fortunate if 5 percent of the projects eventually are profitable.

Dr. Lueck maintains that the function of industrial research is (1) to produce the technology that a company requires in order to grow and maintain its competitive position; (2) to have that technology available when and where it is required, and (3) to produce that technology at an overall profit.

The following breakdown is a generalized version of types of research conducted by most firms:

- I. Basic Research
- II. Applied Research
 - 1. Growth Research
 - a. New Products
 - b. New Uses for Existing Products
 - Maintenance of Business Research
 - a. Product Improvement
 - b. Elimination of Hazards
 - 3. Cost Reduction Research
 - a. Lower Cost Processes
 - b. Lower Cost Raw Materials
 - 4. Protection Research
 - a. Alternate Raw Materials
 - b. Public Relations

J. F. Battley

President Joseph F. Battley commended members of the Federation for the contribution they have made to the technological progress of the coatings industry during the last five decades.

He dwelt at great length on the (Turn to page 90)

csc NITROPARAFFINS as solvents in VINYL COATINGS

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High solids vinyl formulations prepared with 2-Nitropropane have good stability and show no tendency to gel during storage. 2-NP resin solutions are considerably lower in viscosity than mixtures based on medium-boiling ketones, allowing higher weights of solids in a given volume of lacquer and thus greater surface coverage. The higher evaporation rates of the ketones normally used are serious handicaps leading to rapid setting up of films and poor flow. Flammability is a constant fire hazard. The slow evaporation rate of 2-NP and Nitromethane solutions produce good flow. The NP's have mild, agreeable odor and escape more rapidly when drying, eliminating odor problems. High flash points and low volatility are added safety features.

2-Nitropropane and Nitromethane are also excellent solvents for acrylics, cellulose acetate, cellulose acetate butyrate, and epoxy resins.

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New latex formulations revolutionize metal finishing

Now, for the first time, a water-thinnable system can perform equally well for metal finishing as traditional solvent systems. For years, rusting has been the big obstacle to using water-thinnable paints. But new Dow latex formulations solve this . . . and provide other exclusive advantages as well.

Dow latex fulfills a need for easier-to-use metal finishes — in both mass and piecework production. Exceptional adhesion and resistance to water have been established. By using water instead of organic solvents, important economies are realized. Solvent recovery systems are no longer needed. Fire insurance rates are lower. And working conditions are improved.

Dow Coatings Research is perfecting a wide range of formulations, particularly in the field of industrial metal primers. To help you make latex metal paints for specific needs, you are invited to use Dow Coatings Technical Service. Phone or write the dow Chemical Company, Midland, Michigan — Plastics Sales Department Pt.1819N-2.

LATEX T.M.

YOU CAN DEPEND ON

ONE-STEP MIXER

By Charles Friedman*

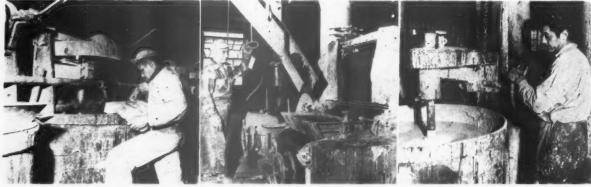
The growing trend to water-thinned paints has created a difficult pigment-dispersion problem. Paragon Paint and Varnish Corp. has discovered a new one-step mixer that not only solves this problem, but does the job thirty per cent faster than it takes to mix alkyd paints with conventional post mixers and roller mills. The pre-mixing operation is eliminated. Here are the details . . .

UR problem at Paragon was a familiar one to paint men—getting the proper dispersion of pigment in acrylic paints. We wanted a mixing system that would guarantee stability and uniformity.

Paragon is 33 years old now, but we have always kept our interest in products and new techniques. In line with this policy of keeping up to date, we began production of acrylic paints a little over three years ago. As the demand for these special flat paints became greater and our production of them increased, the problems of maintaining uniformity of grind, viscosity, dispersion, and color grew.

About a year ago we installed a trial model of a homogenizer-mixer manufactured by the *Gifford-Wood Co.*, Hudson, N. Y., which works on a new blending principle. It is called an Eppenbach homo-mixer and was designed to permit the rapid dispersion of pigments into

*Technical Director, Paragon Paint and Varnish Corp.



In the old method of pigment-dispersion, the operator adds pigment to the vat in a pre-mixing tank (left). When it has been mixed as fully as possible, the paint is discharged from the bottom of the vat into a trough which leads to a roller mill on the floor below. The pigment is further dispersed by the grinding action of the roller mill. In center photo, the operator releases pre-mixed paint from the vat on the floor above. At right, conventional post style mixer is adjusted.

the surrounding vehicle as well as to minimize the incorporation of air during the processing cycle. In this way, a more stable dispersion is formed. Furthermore, because of the abrasive nature of the product under consideration, abrasion-resistant materials of construction in the homogenizing head were recommended.

Savings

After using this trial model constantly for six months, subjecting it to our most difficult mixing problems, we found that mixing time had been cut 30%. This meant a saving of half an hour on every 150-gallon batch, with the elimination of one whole pre-mixing operation.

Despite this shorter mixing time, all our tests on the mixed paint showed thorough dispersion and no evidence of flocculation. Batch after batch met rigid specifications.—tests including draw down on a North Standard Gage, tri-stimulus color determination, both 60° and 85° tests on a Photo-volt gloss meter, and viscosity.

A third benefit was the labor savings in cleaning the homomixer. We simply hoisted the machine out of the vat, wiped it clean, then let it run in a water-detergent mixture for a few minutes. Conventional blending equipment takes about twice as long to clean, and also presents certain safety problems.



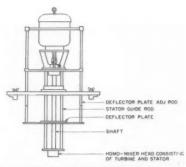
Homo-mixer is pulled out of vat by simple hoist system. Shaft, stabilizing rods and deflector plate can be easily wiped clean.

Finally we found that when compared on a production basis

over a given period of time, the homo-mixer actually costs 25% less than a roller mill doing the same type of work. Naturally, on the basis of all these advantages we obtained our own homo-mixer, which was installed about a year ago.

How Mixer Works

The homo-mixer is a high-speed, high shear homogenizer-mixer with a turbine-stator mechanism. The motor is mounted above the homogenizing head, and mixing-homogenizing is carried on by immersing the head in a vat. The turbine rotates at a speed (3,500 to 8,000 rpm.) that develops a pressure differential between the bottom of the turbine and the surface of the paint. As a result, the paint is continuously drawn from the bottom of the vat and forced to pass through the restricted openings in the mixing head where it is sheared and broken down.



Line drawing of homo-mixer showing integral parts.

Since the turbine also acts as a pump, the paint is discharged in an upward direction after it has passed through the homogenizing zone. An adjustable baffle then deflects this rising current toward the sides of the vat. There the paint is directed back down into the mixing area where the cycle is again repeated.

How Mixer is Used

All of the mixing is done in one vat. Bags of pigment are cut open and poured into the vessel containing water and wetting agents. The homo-mixer is put into operation before the pigments and fillers are added. After the pigment is dispersed, we add the acrylic resins, defoamers, mildewresistant agents, and other additives.



Pigment is poured into vat with homo-mixer already in position.

With the old system, pre-mixing of these ingredients was done with a conventional paste mixer and then fed down in a trough into a roller mill. There, running between rollers operating at different speeds, the paint was subjected to a combination pressing and rubbing action over a period of time, and finally discharged with a scraper.

Our homo-mixer is a 20 HP unit which is handling paste as high as 110 Krebs units in viscosity. We manufacture two lines of acrylics (an interior and a combination interior-exterior including over 100 different finishes) with the homomixer.

We make quality tests on every batch of paint during the mixing operation so that control adjustments can be made at this time if necessary. Later, each batch is tested in our laboratory to make sure it scientifically measures up to our established specifications,



Draw test being made on North Standard Gage to check paint grind.

FEATURES of the 70th ANNUAL NPVLA CONVENTION

ORE than 1700 members and guests of the National Paint, Varnish & Lacquer Assoc. were on hand for the 70th Anniversary Convention of the Association held last month in the nation's capital.

The meeting featured four forums in addition to the three general sessions, and addresses by Secretary of Commerce Sinclair Weeks, Senator Wallace F. Bennett of Utah and Leo Cherne, executive director of the Research Institute of America.

President Battley's Report

The President's Report was presented by Joseph F. Battley, president of the Association.

In addressing the meeting, General Battley quoted the words of the late Ernest Trigg, past president of the Association. He said, "We must glorify and glamorize this industry of ours and do it directly to the public over the heads of all intermediate factors.

"We need to do this in an intelligent, consistent and sustained way to bring about a permanent appreciation of the products of this industry and thereby insure more regular and frequent use of our materials and prevent possible



JOSEPH F. BATTLEY
President

inroads of other industries into the fields which legitimately belong to us."

General Battley said that those words were truisms ten years ago when they were spoken, and that they are still truisms today and they will remain truisms in the future.

He went on to say that the new age of man-made satellites will provide immediate challenges for the industry, which will be called upon to meet conditions still not designated.

Secretary Weeks

Speaking before the general session of November 5, Secretary of Commerce Sinclair Weeks said, "The amazing growth in American population, education, research and transportation, and dynamic economy, it seems to me spells tremendous business activity, and high employment in the years ahead."

He said that the economy is levelling off at a very high level, and that 1958 may be a breather, with changes from 1957 fractional only.

The Secretary spoke out against "bigger and bigger government," particularly in regard to government competition with private industry. He urged a greater understanding by industry of the government's partnership in all affairs, and a greater interest by the people in what is going on today.

Leo Cherne

Leo Cherne of the Research Institute of America spoke on "What Lies Ahead" at the final general session of the meeting on November 6. Mr. Cherne spoke on the condition of business and the recent developments in Russian politics and scientific achievements.

He said that while business confidence was undoubtedly unsettled by the recent stock market slide, the extent of general pessimism has been overstated. He said that a great majority of several hundred business executives responding to a Research Institute poll saw no trouble ahead for their companies, or business generally.

Mr. Cherne said that in Russia, the Zhukov demotion is entirely a matter of internal Kremlin politics, with no basic ideological, political or foreign issues involved. He said the Communist Party machine dominates all other Soviet institutions, and that the Russian people play no role in Kremlin shifts.

Senator Bennett

Senator Wallace F. Bennett of Utah spoke before the opening general session on November 4. His topic was, "Can We Keep Our Dollars Sound."

The Senator said the nation must not permit the news of Russia's satellite achievements to serve as an excuse for "fiscal irresponsibility." He said that if there is a choice between national survival and a balanced budget the decision must always rest with the former.

"But I am convinced," the Senator said, "that we are not faced with such a choice." He said that somewhere within the huge defense budget we can find additional funds that are necessary for missiles and satellites.

Forums Held

Among the forums held at the meeting were sessions on advertising and sales promotion; roof coating and roof cement; putty, glazing and caulking compounds, and trade sales.

The Advertisers and Sales Promotion Managers' Forum featured discussions on "Arriving at Color Changes" by W. D. Kinsell, Jr., "Gimmicks in Advertising and Selling" by G. V. Wise, "Sales Incentives Programs" by H. S. Felton, Jr., and "How to Recruit Salesmen and Sales Trainees" by Henry Behnke, panel chairman.

Speaking at the Roof Coating and Roof Cement Manufacturers' Forum, Harvey Miller of the Engineering Research and Development Laboratory, Ft. Belvoir, Va., discussed "Development of Roof Coatings for Engineer Use."

Mr. Miller said that investigations into economical effective service life of roof coating materials revealed that a catalytically (P₂O₅) blown asphalt appeared to have good potentialities, along with Saran and epoxy modified asphalt roof coatings.

Aluminum Asphalt Coatings

Robert I. Wray of Aluminum Company of America spoke on "New Developments and Research in Aluminum Asphalt Roof Coatings."

Among the advantages of aluminum asphalt roof coatings over unpigmented coatings listed by Mr. Wray were increased weather durability, reduction of tendencies of coatings to blister when applied over badly weathered surfaces, and high reflectivity, which tends to keep underlying areas cooler.

The Putty, Glazing and Caulking Compound Manufacturers' Forum held November 5 featured a talk by R. A. Nolan of the National Buying Division, Federal Supply Service, General Services Administration. Mr. Nolan spoke on "Federal Government Procurement and Specification of Putty, Glazing and Caulking Compounds."

A panel discussion was also held on "New Developments in Vehicles for Sealants." Participating in the discussion were D. K. Farstad of Spencer Kellogg & Sons, Inc., Julian Panek of Thikol Chemical Corp., P. H. Ravenscroft of Standard Oil Co. of Indiana, W. C. Smith of Enjay Co., Inc., and N. L. Catton of E. I. du Pont de Nemours & Co.

Trade Sales Forum

The Trade Sales Manufacturers' Forum featured an address by R. A. Whitney, president of Marketing Audits Institute, Inc. He spoke on "1958 Looks to the Marketing Executive."

A panel discussion on "What We Expect From Paint Products" was held as part of the Trade Sales Forum, with representatives of architects, builders and maintenance people participating.

Waldron Faulkner, presenting

the architect's views, called upon the industry to adopt a color standard for ready-mixed paints which are used in large quantities. That, he said, would aid architects in their selection of colors, and would enable contractors to follow specifications accurately. He recommended the Federal Color Specification as a good initial standard, which might be revised if needed.

Maintenance Views

R. C. Peacock, speaking for maintenance people, urged the cooperation of paint manufacturers, dealers and contractors in the education of maintenance people on the best uses of coating materials.

He said there is room for improvement of alkyd flat enamels, particularly of the "curing process" of four to six weeks, during which coated surfaces may not be washed. He also noted that containers other than five gallon cans, which are too large for general use, do not permit use of rollers and screens without first transferring paint to roller pans.

Also featured at the meeting was an address by Dr. Ernest Dale, Associate Professor of Economics and Business Administration at the Cornell University Graduate School of Business. Dr. Dale spoke on "Modern Management Techniques and Practices" at the general session of November 5.

Industrial Products Finishes

The Industrial Product Finishes Luncheon and Panel Discussion for Management Personnel highlighted the subject "How to Develop Sales Leadership and Make People Buy." Speakers were Irving Gilman of the Institute for Motivational Research, Inc., and Dr. Arthur Secord, Professor of Speech at Brooklyn College.

The Junior Executives Breakfast on November 4 featured a panel discussion on "What Is the Future of Our Industry?" Moderator of the panel discussion was William E. Hood of Industrial Paint Mfg. Co.

Officers elected at the Federation meeting include Joseph F. Battley, president; N. W. Kelley, vice president; H. Braith Davis, treasurer; Allan W. Gates, secretary, and Don T. Barnes, divisional vice president.

PRODUCTION TIPS

X-Ray Level Checking Device Insures Accuracy in Filling Operations

In measuring the contents of cans moving off a production line, some type of device is generally employed to insure accuracy of fill.

A unit called the Hytafill level checker now performs checking operations through the use of a principle radically different from those previously employed.

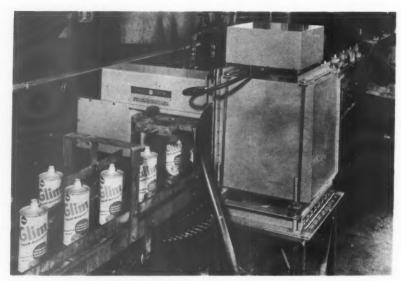
Weighing machines commonly used for checking operations function mechanically. They pick up the cans, and if weight is sufficient to depress the pick-up levers, allow them to continue along the line; if weight is insufficient, the cans are detoured.

The Hytafill level checker measures fill without mechanical contact. A narrow X-ray beam is flashed through the can and, if fill is inaccurate, triggers a blast of compressed air which knocks the can off the line into a receptacle. The air blast rejector is not part of the Hytafill equipment, so rejection devices of other types can be employed.

Fill-checking accuracy is high with Hytafill, which responds to level variations as little as 1/32". Translated into more useful terms: in the brewing industry alone (which turns out more than 6 billion cans per year), as little as 1/32" variation per can makes a difference of 47,500,000 cans annually. Accuracy, however, depends upon the smoothness of the conveyor line in presenting the cans for inspection.

The response of the unit is rapid. Most weighing machines have a practical limit of 350 cans per minute, a figure which has been dwarfed by Hytafill's speed of up to 900 cans per minute.

Very little space is required by the Hytafill level checker. A solid 12" x 17" supporting platform is sufficient for its detector, and its small control unit can



Cans of liquid detergent being checked by Hytafill.

be set up anywhere within 50 feet of the detector.

Unlike mechanical devices which have many moving parts subject to wear and tear through use, the level checker's only moving part is the shutter that operates the X-ray beam. Cleaning is simplified, since the equipment can be washed down with either steam or water.

Another difficulty eliminated by Hytafill is the jam of cans that may result from weighing machine failures. With Hytafill, even though cans stream through at rates up to 15 per second, failure of the unit would not interfere with the flow of the production line, since no mechanical contact is involved.

Hytafill units market at about \$3000, as contrasted with about \$6000 for a high-capacity weighing machine. Pro-

vision for a rental service is made by the manufacturer, General Electric Company, X-Ray Department. The rental plan, which includes service and replacement of tubes and parts, is approximately \$100 per month.

The Hytafill principle is easily grasped. A narrow X-ray beam traverses the conveyor when the checker's photoelectric beam is interrupted by the passage of a can. X-Ray beam height is adjusted to the desired fill level, and when fill is incorrect, the X-ray beam is so altered by the can's contents as to register on a detector. The amplified signal from this detector triggers the rejecting device.

No radiation problem exists, since the beam is quite diminutive, and all shielding required is already included in the unit's design.

An Authoritative Report On SAFFLOWER

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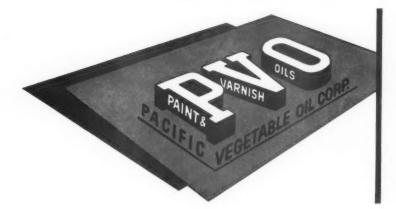
"It is apparent that non-break Safflower is an extremely versatile oil in that it can be used to replace both alkali refined soya and raw linseed with generally better results. In a plant where both are used, this would mean one tank in place of two, and less frequent, larger purchases of oil."



The above quotation is from a recently issued report by Daniel-Litter Laboratories, New York City, consultants for the protective coatings, ink and allied industries.

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Reprints of this illustration, suitable for framing, are available on request from your Du Pont Pigments salesman.

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Rom Du Pont's full line of "Ti-Pure" titanium dioxide pigments, you can find whites that exceed the whitest whites found in nature. In addition, these pigments offer important sales advantages—properties that can improve the performance of your paints.

HIDING POWER—If you make an alkyd, emulsion or oil-base paint, specify "Ti-Pure" for maximum hiding power. You can order "Ti-Pure" from a variety of grades which will give the degree of chalk-resistance required to meet formulation specifications.

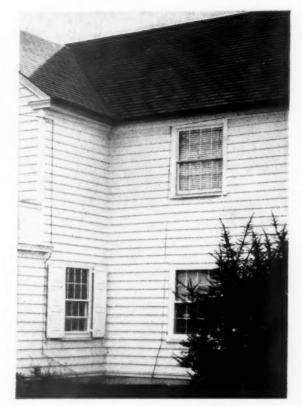
DURABILITY—"Ti-Pure[†]" gives paints the ability to stand up to wear and exposure both indoors and out. There's a grade that will provide your particular paints with the best combination of resistance to yellowing and weather.

BATCH-TO-BATCH UNIFORMITY—on all shipments of "Ti-Pure" and pigment colors—is carefully maintained to provide a minimum of variation and thus simplify the continued manufacture of any paint product. Du Pont technical assistance is available to help you solve a pigmenting problem. For information, consult your Du Pont Pigments representative or write: E. I. du Pont de Nemours & Co. (Inc.), Pigments Department, Wilmington 98, Delaware. In Canada—Du Pont Company of Canada (1956) Limited, P. O. Box 660, Montreal, Quebec.

In addition to Ti-Pure® titanium dioxide pigments, here are a few of the fine pigment colors in the Du Pont line offering the properties you require:

Monastral® Blues and Greens "Ramapo" Blues and Greens Molybdate Oranges Chrome Yellows Parachlor Red Zinc Yellow Toluidine Reds Shading Yellows

Green Gold-Durable Organic Yellow



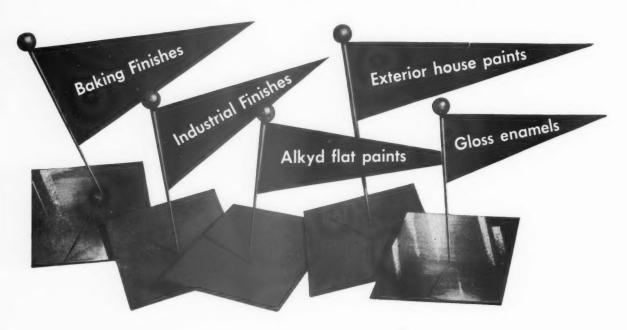
HOUSE TESTS are an important part of the Du Pont Pigments paint-research program, designed to provide you with thoroughly tested in-use data on a wide variety of paint formulations.



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• Xylol • Butyl Oleate

Phthalocyanines



NEWS

Francis Schofield Given Shuger Memorial Award

The Herman H. Shuger Memorial Award has been presented to Francis Schofield for the most significant contribution to the Baltimore Paint & Varnish Production Club.

Mr. Schofield is director of the scientific section of the National Paint, Varnish & Lacquer Assoc. The presentation was made recently at a joint meeting of the Baltimore Paint & Varnish Production Club and the Baltimore Paint, Varnish & Lacquer Assoc.



Howard Sholl (right) presents the Herman H. Shuger Memorial Award to Francis Schofield.

Mr. Schofield has been a member of the Baltimore Club since 1937, and was president of the Club in 1944. He is a graduate of Lehigh University, and has been with the National Bureau of Standards in Washington.

He has been with the National Paint, Varnish & Lacquer Assoc. since 1936, holding the positions of assistant technical director and chief of the technical division before becoming director of the scientific section.

In other meeting business, Bill Younger, president of the Baltimore Paint, Varnish & Lacquer Assoc., presented a check for \$500 to Phil Knitz, president of the Baltimore Club for the Club's educational program.

A talk on "Relationship Between Management and Technical People" was presented by Bob Bonney.



PAINT FOR CHRISTMAS TOYS: A non-poisonous paint for toys is presented to firemen in Dallas by A. W. Frost, sales manager for Jones-Blair Paint Co. there. Jones-Blair provides paint each year for firemen to paint toys to be given to underprivileged children at Christmas.

Shell Opens Texas Terminal

Shell Chemical Corp. has announced the opening of new facilities for the distribution of industrial chemicals in the Dallas and Fort Worth, Texas, areas.

The terminal is located at 1809 Rock Island in Dallas. It will permit delivery on short notice of glycerine in drums, Epon resins in drums and bags, and the complete line of the company's solvents in tank trucks and drums.

O. D. Walraven, technical salesman, is located at the terminal.

Atlanta Office Opened

Commercial Solvents Corp. has announced the opening of a new district office in Atlanta, Ga. Headquarters are at 344 Williams St., N. W.

T. Austin Young has been named district manager of the new office. He has been with the firm since 1941. Sales representative operating from the Atlanta office for industrial chemicals is Walter Rushin.

The new office serves Alabama, Florida, Georgia, South Carolina and North Carolina.



HONORED BY DIRECTORS: B. G. Young (third from right), manager of W. P. Fuller & Co.'s Fresno, Calif., branch, is honored by the firm's directors on his fiftieth anniversary with the company. It was the third time directors held a meeting outside of San Francisco in more than 100 years.

NEWS

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American Can, Marathon Announce Merger Plans

American Can Co. and Marathon Corp., producer of pulp, paper and paperboard, have reached and agreement on terms for merging the two firms, it has been announced.

Under the agreement, a maximum of 2,970,810 shares of American Can common stock are to be exchanged for shares of Marathon common at a ratio of eight-tenths of a share of Canco common for each share of Marathon.

The plan calls for American Can to acquire all of Marathon's assets and subsidiaries, according to William C. Stolk, Canco president.

Approval of the merger was to be voted upon by stockholders of both firms at meetings held this month. Stockholders were also to vote on an increase in American Can's authorized common stock from the present 15 million shares to 25 million.

The acquisition of Marathon's paper production facilities will enable Canco to supply directly a portion of its paper requirements. The firm is said to be a major user of paper.

Mr. Stolk said that Canco will continue to purchase substantial amounts of its paper requirements from other suppliers, and that Marathon will continue to serve other companies as in the past.

Newport Opens Florida Plant

Newport Industries Co. Division of Heyden Newport Chemical Corp. has announced the opening of a three-million dollar naval stores plant at Telogia, Fla.

According to E. J. Sisson, vice president in charge of operations, the new plant will produce FF grade rosin, turpentine, pine oil and dipentene.

The fifth Newport naval stores production unit, the plant is located on a 100-acre site. It has a capacity for producing thousands of tons of stump wood per month by continuous fractioning units.



OSCAR FOR ANNUAL REPORT: William J. Welch (left), vice president and director of National Lead Co., and manager of its metal department, receives a bronze "Oscar" for the best 1956 annual report to shareholders in the paint and coatings industry, as judged by Financial World magazine. Presenting the award is Richard J. Anderson, editor and publisher of the magazine.

Glidden Executives Meet

More than 150 industrial and trade sales regional directors and regional sales managers attended the annual managers conference of the Glidden Co,'s paint division

Color Guild Names Officers

Ben Einhorn of Adelphi Paint & Color Works, Inc., has been elected president of the Color Guild Associates, it has been announced.

The organization held its 1957 convention in San Francisco recently.

Other officers elected at the convention were Jack Robinson, Jr., International Paint Co., first vice

held in Cleveland, Ohio recently.

Headed by Dwight P. Joyce, chairman and president of the firm, the conference outlined product, sales, advertising and production plans for 1958.

president; A. V. Ward, Hanley Paint & Glass Co., second vice president; J. E. DeRosia, Stewart Paint Mfg. Co., secretary-treasurer, and J. W. Harryman, Olympic Paint & Varnish Co., chairman of the board.

Elected to the board of directors were Cliff B. Walker, Walker Bros., Ltd.; W. J. Parker, Parker Paint Mfg. Co., and Leo J. Klinger, Klinger Paint Co.



Members of the newly-elected board of directors of the Color Guild Associates are (seated, left to right) J. W. Harryman, Olympic Paint & Varnish Co., chairman; Ben Einhorn, Adelphi Paint & Color Works, Inc., and Jack Robinson, Jr., International Paint Co. Standing (left to right) are A. V. Ward, Hanley Paint & Glass Co.; Leo J. Klinger, Klinger Paint Co.; J. E. DeRosia, Stewart Paint Mfg. Co., and W. J. Parker, Parker Paint Mfg. Co.

NEWS

. Introduction of the state of

Belcher Heads NPVLA Board

B. M. Belcher, president of Benjamin Moore & Co., has been



B. M. Belcher

elected first chairman of the newlycreated board of directors of the National Paint, Varnish and Lacquer Assoc., it has been announced by General Joseph F. Battley, presi-

dent. Mr. Belcher has also been elected chairman of the executive committee.

Mr. Belcher joined Benjamin Moore in 1934, and has been its president since 1952. During World War II, he was chief of the Coatings Section of the Chemical Bureau of the War Production Board, and was a "without compensation" consultant to its successor organization in the Korean conflict. He is a member of the National Defense Executive Reserve.

V. A. Acer, vice president of Spencer Kellogg & Sons, Inc., has been elected vice chairman of the board, and William E. Hood, president of Industrial Paint Mfg. Co., has been named vice chairman of the executive committee.

Members of the executive committee are: M. J. Merkin, president of M. J. Merkin Paint Co.; David H. Moran, president of The Reardon Co., and A. W. Steudel, president, The Sherwin-Williams Co.

W. C. Stolk, president of American Can Co.; F. L. Sulzberger, chairman of the board of Enterprise Paint Mfg. Co., and Val Wurtele, chairman of the board of Minnesota Paints, Inc., are also members of the executive committee.

Chicago Agent Named

The M. B. Sweet Co. has been appointed agent of Daniel Products Co. for the Chicago area, according to an announcement by Frederick K. Daniel, president of Daniel Products.

French Paint Delegation Tours American Facilities

A delegation of 25 French paint and varnish manufacturers on hand for the recent conventions in Philadelphia and Washington made a tour of American paint, varnish and lacquer plants last month. cellulose paints and their resistance to the natural elements.

The group began the tour with a visit to the central laboratories of Benjamin Moore & Co. at Newark, N. J., where it witnessed the evolution of paint from the test tube to the finished product.



Members of the French paint delegation inspect facilities at the plant of Gardner Laboratories, Inc., Bethesda, Md. The group attended the recent conventions held in Philadelphia and Washington.

The visitors, all members of the Paint and Varnish Federation of France, were sponsored on the tour by the National Paint, Varnish and Lacquer Assoc.

Purpose of the tour was to give the visitors a glimpse of American methods, with special emphasis on paint pigmentation and on the relatively new fields of plastic and A group of 13 French delegates later visited the plant of Gardner Laboratory, Inc., at Bethesda, Md.

The group was interested in demonstrations of new instruments for measuring physical properties of paints which were staged by personnel of the Gardner Laboratory.

Chemical Firm Gets License

American Cyanamid Co. has been granted a license by the U. S. Dept. of Agriculture for the use of a process involving turpentine derivatives which has been patented by the Department. The firm had previously been licensed to employ another Department patent on methods for making the pine-gum chemicals.

The patents cover the preparation of saturated terpene hydroperoxides and their use as polymerization catalysts. Both patents were issued to Dept. of Agriculture scientists Gordon S. Fisher and Dr. Leo A. Goldblatt of the Southern Utilization Research and Development Division, Agricultural Research Service, New Orleans, La.

One of the widest and most important applications of the turpentine chemicals is the use of paramenthane hydroperoxide as a catalyst in the manufacture of S-type cold rubber.

The patent which has recently

been granted is U. S. Patent No. 2,775,578, "Polymerization Initiated by Saturated Cyclic Terpene Peroxides." The earlier patent is U. S. Patent No. 2,735,870, "Peroxides of Saturated Cyclic Terpenes and Method of Producing Same."



BROOKLYN CITATION: Brooklyn Borough President John Cashmore (right) presents E. A. Eckart, president of Sapolin Paints, Inc., with citation in recognition of the role his firm has played in the paint industry. Occasion was 75th anniversary of the firm



ASBESTINE 325

64 YEARS of production have paid off for International Talc Co. and its customers. As the world's largest producer of magnesium silicate, International Talc Co. announces the availability of their newest member to the family. . . . Asbestine - 325



THIS NEW PRODUCT FEATURES

Good dispersion with minimum use of oil needed in grinding... enables formulating at higher pigment volume concentrations.

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MATERIALS & EQUIPMENT

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new materials and equipment. While every effort is made to include only reputable products, their presence here does not constitute an official endorsement.



RADIRAC

FRACTION COLLECTOR Building-Block Design

Automatic fraction collector called RadiRac, has been designed to take 240 tubes directly in one turntable disk, or in ten individual groupings of 24 tubes each.

RadiRac is of building-block design, which allows researcher to add sub-units as work or budget indicates. Basic assembly can collect fractions from one to four columns on a pre-set time basis. Pre-set time and pre-set volume collection made possible by adding related sub-units.

Uninterrupted collection for indefinite period made possible by design of separate tube racks. Batch handling also said to be facilitated by design.

RadiRac is imported from LKB-Produkter of Sweden. Available from Ivan Sorvall, Inc., Dept. PVP, Norwalk, Conn.

TRANSFER AND SUPPLY PUMP For Dispensing Chemicals

Light-weight, 1:1 ratio transfer and supply pump for use on either open top or bung-type drums has been announced.

Pump may be used for quick dispensing of chemicals, solvents, lubricants, dyes and oils. "RapidFlow" pump said to handle chemicals and inflammable fluids safely. Lever-type control valve starts or stops pump when lever is squeezed or released.

High-volume pump said to be easily adaptable to 120-pound and 400-pound drums and original containers. Pump operates on air pressures as low as 30 pounds. Said to deliver up to 20 gallons per minute of No. 20 motor oil with 150 pounds pressure.

Beeson-Reichert, Inc., Dept. PVP, Toledo Trust Building, Toledo 4, Ohio.



PROTECTOSEAL

DRUM FAUCET Leak-Proof, Self-Closing

Safety drum faucet which is said to prevent leaks and accidental discharge has been developed.

Spring located within body maintains liquid-tight closure at all times. Hand pressure on levertype handle necessary to push back spring and permit flow of liquid. Valve closes automatically.

Kel-F or Teflon O-ring gasket is used to withstand destructive action of chemicals which deteriorate synthetic rubber gaskets. Oring construction said to use positive wedging seat action which forms tight seal to avoid gasket leakage due to swelling, shrinking or cracking.

Protectoseal Co., Dept. PVP, 1920 S. Western Ave., Chicago 8, III.

CHEMICAL INHIBITOR Prevents Container Corrosion

Development of a chemical inhibitor which prevents container corrosion caused by water base paints has been announced.

Product, called Nox-Rust 702, employs both contact and volatile water soluble inhibitors, protecting containers above and below liquid level. Said to be more effective at cheaper cost than other rust inhibitors on the market.

Daubert Chemical Co., Dept. PVP, Chicago 1, Ill.

SCRATCH-HARDNESS TESTER Also Tests Adhesion

Testing instrument provides a means of accurately studying scratch-hardness vs. adhesion properties of organic protective coatings systems.

Each stroke of sliding scratchertip yields film index that is reproducible within close limits and can be handled statistically.

Scratch tester said to provide convenient means of studying cure time of coatings. Also possible to rate adhesion of finish coats to their primers, adhesion of entire coating system to substrate and effectiveness of surface cleaning and preparation of substrate prior to application of coating system.

Gardner Laboratory, Inc., Dept. PVP, 5521 Landy Lane, Bethesda 14, Md.

GARDNER



N E W MATERIALS — EQUIPMENT

STYRENE RESIN For Gold Bronze Vehicles

Modified styrene resin for use in gold bronze vehicles is being produced. Product is called Piccolastic Bronze Vehicle.

Resin is said to be completely neutral and unreactive, and to have excellent color stability to heat and ultra-violet exposure. High viscosity solution is non-gassing with all available bronze pigments, and shows no tendency to gel on storage.

Also available is Picco Resin 420-ES, a polyindene resin for aluminum paints. Product said to provide improved retained leafing, can stability and excellent tolerance for ordinary petroleum thinners, and is said to be non-gassing.

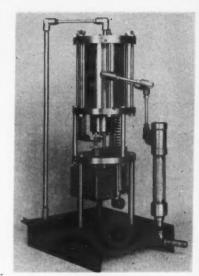
Resin produced in flaked, solid or solution form. Compatible with drying oils, bodied oils, alkyds and oleoresinous varnishes.

Pennsylvania Industrial Chemical Corp., Dept. PVP, Clairton, Pa

VISCOMETER

For Pipe Line Measurements

Viscometer measuring element determines viscosity under existing pressure conditions when a side stream is established to allow a small sample to flow through.



NORCROSS

Measured viscosity information electrically transmitted to viscometer recorder. Temperature of product as it enters viscometer measuring chamber may also be measured.

Pneumatic temperature compensation may also be obtained. Pneumatic transmitter provides air output which is a function of viscosity. Air signals from viscometer and temperature transmitters fed into pneumatic computing relay which measures viscosity compensated for temperature.

Heat exchanger may be installed in side stream when necessary to bring temperature of product within range of compensation.

Norcross Corp., Dept. PVP, Newton 58, Mass.

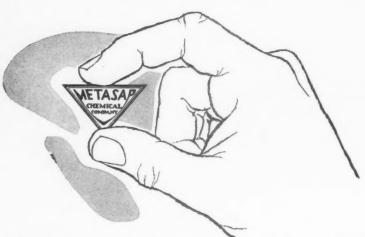
ACRYLIC EMULSION For Water-Based Paint

Polyco 2719, acrylic copolymer emulsion, has been developed for optimum performance as a vehicle in water-based paints.

Copolymer composition and emulsifying and protective colloid system said to have been selected with particular attention to clearness, colorlessness, non-yellowing, stability to heat and sunlight, and water resistance.

Product said to take full advantage of all properties of acrylic polymers, while it imparts outstanding brushing and leveling properties. May be employed in conventional acrylic paints without reformulating.

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little things count!

Metasap Stearates are produced always with your requirements uppermost. A research staff second to none — a modern plant equipped to make "the cleanest stearates made" are your assurance of predictably excellent performance in your plant. And Metasap Stearates are sold by men who are intimately familiar with your processes—you can rely on their advice and help.

Chances are you are using Metasap Stearates already. If not, it's profitable to do so.



METASAP CHEMICAL COMPANY

Harrison, N. J. • Chicago, III. • Boston, Mass. Cedartown, Ga. • Richmond, Calif • London, Canada

the cleanest stearates made



Another addition to an

expanding
line of high-quality
pigments



Self Print Permanent Violet RL Extra Powder 50% Permanent Violet 50% Heliogen Blue



Self Print Heliogen Blue BNF Powder

PERMANENT VIOLET RL EXTRA POWDER

excellent fastness to light

Permanent Violet RL Extra Powder is recommended to the printing ink, paint, enamel, lacquer, plastics and rubber industries—both as a self-color and for shading other fine blues, such as Heliogen Blue BNF, to redder shades.

Excellent fastness to light is the outstanding property of this new addition to our line of dependable pigments. Permanent Violet RL Extra Powder has high tinctorial value, unique blueness, and is non-bleeding in water and in most organic solvents.

Available in powder or in presscake form, samples of Permanent Violet RL Extra are offered for your plant trial. Write us direct for samples and complete product data.

From Research to Reality ...

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GENERAL DYESTUFF COMPANY
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CHARLOTTE - CHATTANOOGA - CHICAGO - LOS ANGELES - NEW YORK - PHILADELPHIA - PORTLAND, ORE, PROVIDENCE - SAN FRANCISCO - IN CANADA: CHEMICAL DEVELOPMENTS OF CANADA, LTD., MONTREAL

Permanent Violet R L Extra Powder and Presscake, manufactured by General Aniline & Film Corporation, are sold outside the United States under the trade name FENALAC VIOLET R L.

SOLVE THESE PROBLEMS

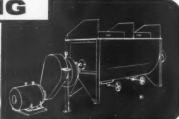
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VERTICAL and HORIZONTAL ROLLER MILLS... For large batch, highproduction operations or small batch work — Sight-OMatic* provides fast, accurate, positive settings to control
Dispersion, Take-Off Efficiency, Product Temperature of
any formulation.



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HEAVY-DUTY TWIN PASTE MIXER... Two compartment, rapid cycle, continuous feed, new paddle action, unique blade shape and positioning — Unbroken flow of thoroughly mixed material — Entire pigment and vehicle mass mixed simultaneously.



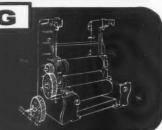
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REPLACEMENT of a single part — REBUILDING of an entire large production mill (of any make) — done on modern, precision equipment at our own plant — Less downtime — Restores worn equipment to maximum productivity.



The Machines and Services listed are only representative of the type and scope of Lehmann's complete facilities. Let us help you solve your particular problems.

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N E W MATERIALS — EQUIPMENT

Among advantages are: excellent mechanical stability, storage stability and freeze-thaw stability; better leveling, in casein-stabilized systems; outstanding color and sheen uniformity; more economical color development; superior non-yellowing characteristics, and excellent resistance to water spotting.

The Borden Co., Chemical Division, Dept. PVP, 350 Madison Ave., New York 17, N.Y.

ACRYLIC EMULSION For Hard Films

A film-forming acrylic emulsion

said to produce hard, tough films which must be dried at elevated temperatures to become continuous, has been introduced.

Called Rhoplex C-72, the product is said to produce clear, colorless films which remain so upon aging. Also useful to modify softer emulsions to produce clear or lightly-pigmented films of intermediate hardness, good gloss and block resistance.

Product said to form film on non-porous substrates at approximately 39°C. Film-forming temperature less predictable on porous substrates. Film from unmodified Rhoplex C-72 has Tukon hardness of 4.3.

Emulsion may be blended with

other acrylic emulsion polymers to reduce film-forming temperature and/or increase hardness.

Rohm & Haas Co., Dept. PVP, Resinous Products Division, Washington Square, Philadelphia 5, Pa.

WATER SOLUBLE RESINS High Molecular Weight

An unusual class of water soluble resins with properties ideally suited for industrial application has been developed.

Trade-marked Polyox, resins are high molecular weight polymers of ethylene oxide. Resins are completely soluble in water at low concentrations, have great thickening power. Other properties are resistance to biological attack, resistance to oils and greases, low moisture pickup in dry form and compatibility with other types of polymers such as starch and polyvinyl acetate.

Among suggested uses are adhesive formulations and water-soluble films. Polyox resins are produced as white granules in four grades with a range of molecular weights: WSR-35, WSR-205, WSR-301 and WSR-701.

Union Carbide Chemicals Co., Dept. PVP, 30 E. 42nd St., New York 17, N.Y.

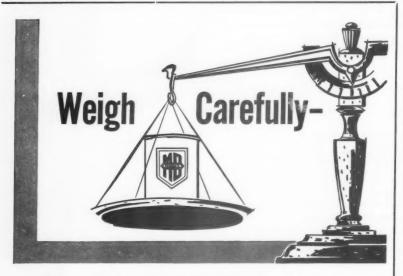
ALKYD EMULSION For Interior Paints

Alkyd resin water emulsion called Cyaqua has been made commercially available as an improved ingredient for interior wall paints.

Product said to combine advantages of solvent type alkyd flat enamels and latex type enamels. Paints made with the emulsion are said to be easy to apply, and free of organic solvents and accompanying odors. Brushes can be cleaned with ordinary water when paint is still fresh.

Paints made with Cyaqua said to have high hiding power, high scrub resistance, and to give control of sheen down to a dead flat finish. Paints contain no casein or other protein subject to decomposition. Non-yellowing white and full range of colors can be made with the alkyd water emulsion.

American Cyanamid Co., Dept. PVP, 30 Rockefeller Plaza, New York 20, N.Y.



the advantages of selecting



ALUMINUM PIGMENTS

It pays to "weigh carefully" the advantages—in fast, coast to coast service and completeness of line—you get when you choose MD Aluminum Pigments for your product.

Warehouses in twenty-two key centers and distributors in thirty principal cities throughout the country, speed delivery of the most complete line of aluminum pastes and pigments available. Your local MD distributor, backed by Metals Disintegrating Company Laboratory Service is a reliable source of information on technical problems.

So "weigh carefully" and you'll find MD delivers the greatest measure of service in the aluminum pigment field.

METALS DISINTEGRATING COMPANY, INC.



GENERAL OFFICES: Dept. F. Elizabeth B. N. J.



how Gelva base paints compare in tests with other types of interior paints

(one of a series)

Using standard test methods and assigned ratings on a scale from 10 to 0—good to poor, a typical GELVA paint formulation compares impressively in degree of leveling with commercial paints bought on the open market.

A represents a PVAc base paint

B represents a styrene butadiene base paint

C represents an acrylic base paint

D represents an alkyd base paint

E represents the average of eight paints tested

GELVA 2361 represents a Shawinigan PVAc paint formulation

This is factual evidence of extra value for paint manufacturers who use GELVA emulsions in their paints. Shawinigan's unequalled experience and continuing research are good reasons for specifying GELVA. For formulation data in booklet, "Gelva Emulsions for Paint," write Shawinigan Resins Corporation, Department 2212 Springfield 1, Mass.

SALES OFFICES: ATLANTA CHICAGO LOS ANGELES NEW YORK SAN FRANCISCO





N E W MATERIALS — EQUIPMENT

POLYURETHANE PRODUCTS 1 and 2 Component Systems

A polyurethane product series including fully reacted and prepolymer types has been introduced commercially.

Product line called "Spenkels" consists of polyurethane materials for coatings. Group includes a one-component, stable coating vehicle said to have reliable shelf life, and a series of two-component system materials in which one part is pre-polymer and other is catalyst.

Products said to produce coat-

ing films that are excellent in durability and corrosion resistance. Variety of applications suggested, including coatings for industrial equipment and plant buildings, marine paints, wire coatings and architectural finishes.

Spencer Kellogg and Sons, Inc., Dept. PVP, Technical Science Dept., Buffalo 5, N.Y.

HIGH SPEED MIXER For Heavy Duty

High speed "Discperser" disperses, deagglomerates, dissolves and emulsifies materials in a liquid base.

Model H units designed to handle from 20HP to 40HP drives.

Completely self-contained oil hydraulic system for raising and lowering. Full 360° mixing swing for tank groupings. Rugged all steel construction.

Standard equipment includes stainless steel shaft, 8" diameter and 12" diameter stainless steel blades and three interchangeable V-belt pulleys which permit choice of 1200, 1800 and 2700 rpm mixing speeds. Units may be supplied with special or variable mixing speed and with physical dimensions to match special space limitations.

Herman Hockmeyer & Co., Dept. PVP, 341 Coster St., New York 59, N.Y.

POLYURETHANE RESIN For Tough Finishes

A plastic and vegetable oil substance has been developed as a resin for paints and varnishes.

Use of the substance, called Polyurethane 101, is expected to bring marked improvement to floor coatings, paints and primers for buildings, boat hulls and auto bodies, low-bake industrial finishes and other industrial coating materials.

Product may be handled and stored like any other paint resin. When mixed with pigments or other paint and varnish ingredients, product facilitates rapid drying, extreme surface hardness, excellent resistance to boiling water, caustic, gasoline and certain acids, good flexibility, high impact resistance and resistance to marring.

Cargill, Inc., Dept. PVP, 200 Grain Exchange, Minneapolis 15, Minn.

PENTAER YTHRITOL In Pellet Form

Technical grade pentaerythritol in pellet form has been made available primarily for use in alkyd resins.

In pellet form, PE is said to shorten cooking cycle, eliminate dust losses and make for easier handling.

Development quantities now available, with full commercial production scheduled before year's end.

Celanese Corp. of America, Dept. PVP, 180 Madison Ave., New York 16, N.Y.



But many emulsion paint manufacturers are avoiding the added costs of hop, skip and jump purchasing by taking advantage of Nopco's complete line of paint specialties. By grouping orders for more than one product they gain substantial discounts and save on freight too. Years of experience stand back of the Nopco line . . . and strategically located plants enable you to receive shipments quicker and more economically. Write for booklet which describes the Nopco line fully. Nopco Chemical Company, Harrison, N. J.



PLANTS: Harrison, N. J. • Cedartown, Ga. Richmond, Calif. • London, Canada

NOPCO PAINT SPECIALTIES:

Anti-foaming agents
Pigment dispersing agents
Freeze-thaw stabilizers
Thickeners
Surface active agents
Pigment mixing and grinding aids

PERSONNEL CHANGES

GOODYEAR

M. J. DeFrance has been named director of the newly-created new prod-



M. J. DeFrance

ucts department, it has been announced. The new unit augments the work of the firm's research, development, production and sales departments in their responsibilities for new products, ideas and investigations.

Mr. DeFrance had been manager of chemical materials and products development prior to his new appointment. He has been with the company for nearly 30 years, and, among his major assignments, he has been assistant manager of mechanical goods compounding and assistant manager of chemical products development.

He is a graduate of the University of Pittsburgh, and has also attended M.I.T. and Harvard.

Appointed as administrators in the new department have been H. J. Bliss, finance; C. B. Marks, marketing, and C. T. Wittl, technical.

Mr. Bliss has been with the company since 1929. He has been chief clerk-accounting for Goodyear Aircraft Corp., where he later became manager of cost accounting and works accountant for the Arizona operations.

Mr. Marks joined the company in 1937, after graduation from Columbia University. He had been manager of manufacturers sales for shoe products prior to his new appointment.

Mr. Wittl, a special products development engineer, is a graduate of M.I.T. He holds a master's degree in Mechanical Engineering from Columbia University. He has been with the company since 1948, and has been manager of mechanical goods design and technical service for the firm's South Africa plant.

LACQUER CORP. OF AMERICA

Charles M. Lewis has been appointed assistant to the president, it has been announced by A. Gartenberg, president.

Mr. Lewis has been vice president of Paragon Paint & Varnish Co. He is a member of the trade sales committee of the National Paint, Varnish & Lacquer Assoc., and a member of the Young Executives Club.

CARGILL

John K. Yarger has been named manager of the Philadelphia sales office for vegetable oils, it has been announced. He succeeds Herbert E. Whiting, who has retired.

Mr. Yarger is a graduate of the University of Minnesota. He has been with the company for seven years. He has recently been manager of the firm's New England sales area with head-quarters in Boston.

Mr. Whiting joined the firm in 1950 when it purchased the linseed oil facilities of Bisbee Linseed Oil Co. He had formerly been eastern area sales manager for Bisbee.

GREAT LAKES SOLVENTS

Ronald H. Richards has been appointed assistant sales manager, it has been announced by Thomas E. O'Conner, vice president and general sales manager.

Mr. Richards has been with the firm since 1954, and has been assistant chemist and technical sales representa-

FERRO CHEMICAL CORP.

Jack H. Dollinger, sales manager, has been promoted to general manager, it has been announced. He is to retain the responsibilities of his previous position.

Mr. Dollinger is a graduate of Brooklyn College, and holds a master's degree from New York University. He had formerly been associated with Clyco Products Co., Inc.



ZINFLEX®
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NEW
TRICKS!

ZINFLEX — a low viscosity modified shellac for lacquers — can impart many new qualities to your formulations and produce truly superior lacquers.

Moreover, with ZINFLEX you can use more shellac in your lacquers, because ZINFLEX has been modified for greater compatibility with hydrocarbon solvents and other common lacquer diluents. And look what ZINFLEX can do for your

WOOD LACQUERS

- clearer, deeper finish
- better adhesion, elasticity, mar resistance
- high oil and naphtha resistance
- high solids content at working body

METAL LACQUERS

- greater adhesion to brass, aluminum, tin plate and steel
- better build
- improved flexibility
- greater hardness
- PLUS the same advantages

ZINFLEX gives to wood lacquers

ZINFLEX is made by the producers of Regular and Refined Vac-Dry shellacs — bleached shellacs of maximum uniformity, cleanliness, solubility and keeping qualities.

Just drop us a line on your letterhead. We'll be glad to send you technical data, suggested formulations, and a test sample of ZINFLEX.

WM. ZINSSER & CO. offices and factories at

516 W. 59th St. New York 19, N. Y.

319 N. Western Ave. Chicago 12, III.

SAPOLIN PAINTS

John P. Engel, general plant superintendent, has been named a director

of the company, it has been announced. Mr. Engel has



mation for the manufacture and packaging of paint products.

He holds several patents in the field of fume control by incineration, and is active in the design of paint processing and paint filling equipment. He has been general superintendent of the firm since 1943.

KOPPERS COMPANY

James A. Roberts has been appointed assistant to the chemical products manager, chemical division, it has been announced.

Mr. Roberts is a graduate of West Virginia Wesleyan College with a degree in Chemical Engineering. Prior to joining the firm in 1947 as a chemical salesman, he had been a chemist and chemical engineer for E. I. du Pont de Nemours & Co.

PETRO-TEX CHEMICAL

William H. Davis has been named chemical sales manager of the firm, it has been announced.

Mr. Davis has been with the firm since 1955, when he became director of sales development. He had previously been associated with Monsanto Chemical Co. and Magnolia Petroleum Co.

SAN FRANCISCO ... PLANTS FROM COAST TO COAST



ARCHER-DANIELS-MIDLAND

John C. Geiss, manager of the St.

Louis area branch office, has trans-

ferred to the Cleveland office to be-

come manager there, it has been an-

J. C. Geiss

nounced.

. H.

Louis H. Price succeeds Mr. Geiss as manager of the St. Louis office.

Mr. Geiss had been manager in St. Louis since 1954, when he moved there after serving as a sales representative in New York. He attended the Wharton School of Business of the University of Pennsylvania, and holds a degree in Chemical Engineering from Virginia Polytechnic Institute.

Mr. Price had been president of Price Varnish Co. until purchase of certain of that firm's assets by ADM. At that time he became sales manager for the Price line of products. He attended

Central College.

Charles A. Aldag, formerly technical sales representative at Cincinnati, has become manager of the newly-created Pittsburgh branch sales office, it has also been announced.

Mr. Aldag joined the company as a technical sales trainee in 1955, and was assigned to the Cincinnati office the following year. He holds a degree in Chemistry from Purdue University and a master's degree in business administration from Indiana University.

GLIDDEN

W. B. Stone has become trade sales manager of the firm's central region, it has been announced. He replaces Richard H. Stephens, who has recently been promoted to the post of regional director, northwest region.

Mr. Stone joined the firm in 1933 in the stockkeeping and credit departments of the midwest trade sales region. He was appointed acting sales manager of that region in 1952, and became sales manager the following year.

H. H. Hall, Jr., formerly trade sales manager of the Pacific region, has replaced Mr. Stone as sales manager of the midwest region, it has also been announced.

Mr. Hall has been with the company since 1952. He has had 20 years of prior experience in the Paint industry. He became manager of the New York division in 1953, holding that post until





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Accurately duplicate ball mill grinding action. Easy to handle, discharge and clean. Fully glazed outside; unglazed inside. PRJ-1G has recessed hardware for smoother roller mill operation.

Close-fitting covers prevent leakage; can be tightened by hand. Equipped with Neoprene or rubber gaskets. (Neoprene recommended for oil base grinding.) Quart, gallon and two-gallon sizes. Ball charge included.



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BEAVER FALLS : PENNSYLVANIA

Write today for Bulletin BI-56 with the latest information on other related McDanel products



VELSICOL

Dr. William P. Utermohlen, Jr., has been appointed director of research



W. P.

of the corporation, it has been announced.

Dr. Utermohlen had been assistant research director of the Toni division of the Gillette Co. prior to his present association. Since 1940 he has done re-

search for the Tennessee Eastman Co., the Institute of Textile Technology and the Permutit Co., for whom he had been chief research chemist.

He is a graduate of the University of Kansas, and he obtained his doctorate at the University of Nebraska.

Write for complete

Weather-Ometer catalog.

WEATHER-OMETERS®

TITANIUM PIGMENT CORP.

Daniel F. Burns has been transferred to the New England sales territory, Roger H. Carlson to the Los Angeles area and Kenneth E. Peters and Justin P. Tracy to the central western district, it has been announced.

A graduate of Holy Cross College, Mr. Burns began his career with the firm in 1949 as a junior chemist. He has been salesman for the Chicago territory since 1955.

Mr. Carlson has been with the firm since 1956, when he became a sales trainee. He attended Colby College and Brown University.

Mr. Peters became a sales trainee with the firm in 1952. He was assigned as a salesman in the New England territory in 1954. He is a graduate of Bucknell University.

A graduate of Seton Hall College,

Mr. Tracy has been with the firm since 1956.

EMERY INDUSTRIES

Orville W. B'Hymer has been promoted to the newly-created position of customer service manager for the fatty acid sales department, it has been announced.

Mr. B'Hymer will coordinate customer relations in order to afford more individualized service and attention. He has served as assistant to the sales manager since joining the firm in 1947. He attended the University of Cincinnati Evening College.







R. C. De Lollis

Robert C. De Lollis has been appointed sales representative for the Mid-Atlantic sales territory, it has also been announced. He succeeds P. N. Leech, who has recently been transferred to the Chicago office.

Mr. De Lollis is a graduate of Harvard University, and he has taken graduate work at the University of Chicago. His new territory includes portions of Pennsylvania, New York, New Jersey and Maryland.

CROWN CORK & SEAL

Richard W. Beeler has been named manager of sales development of the can division, it has been announced. He had formerly been manager of sales development of the crown and closure division.

Prior to joining the firm, Mr. Beeler had been director of sales administration of the Hamilton Watch Co., and he had also been assistant to the vice president and general manager of the Supplee-Wills-Jones Milk Co.

DII PONT

Joe S. Amery, Jr., has been named to the newly-created post of manager of sales training in the fabrics and finishes department, it has been announced.

Mr. Amery joined the company in 1947 as a salesman in training. He became a cellophane salesman in 1948, and has been a sales training specialist since 1954.

He is a graduate of William Jewell College, Liberty, Mo. He has been a high school public speaking teacher, and director of enrollment at his alma mater.



But now you can do something about it, as it affects your product, with the Atlas Weather-Ometer.®

Weathering durability and color fastness is a major problem in developing a new paint product. Reliable answers to a new product's resistance to weathering can be obtained with speed and accuracy in the Atlas Weather-Ometer. Test programs can be exactly duplicated at any time to give accurate comparative data of various formulas. For quality control in production—the

For quality control in production—the Weather-Ometer is useful in maintaining the quality standard of the product, by checking each batch run for any deviation from the established weathering and light fastness standards.

A positive control of specimen temperatures greatly increases the accuracy of test results. Automatic humidity control up to dew point is available as optional equipment.

Both horizontal and vertical testing is available. Shallow containers are used for semi-liquid material and vertical panels for solids.

LAUNDER-OMETERS

All automatic controls including complete voltage controls are located on the front panel above the test chamber door. Source of light is two Atlas enclosed violet carbon arcs.

Sales representatives in principal cities throughout the world.

ATLAS ELECTRIC DEVICES CO.



FADE-OMETERS®

NOPCO

Thomas J. Campbell has been appointed assistant to the sales manager

T. J. Campbell

of the Metasap Chemical Co. subsidiary, it has been announced.

Mr. Campbell has had 20 years of experience in field and and home offices with the firm. He will be concerned with sales develop-

ment of vinyl stabilizers.

He is a graduate of Franklin and Marshall College, and he has completed post-graduate work at New York University.

William F. Dolan, Jr., has become technical sales representative in North Carolina and eastern Tennessee, it has also been announced.

Mr. Dolan is a graduate of Auburn, and has been with the firm since 1955.

GENERAL ELECTRIC

Harold W. LeBoeuf has become manager of intermediates operations, and Richard D. Rice has been named manager of rubber and polymer operations for the silicone products department, it has been announced.

Mr. LeBoeuf had been one of the first engineers assigned to the silicone operation at Waterford, N. Y. He had previously been section foreman, general foreman and manager of materials. He joined the company in 1940 after graduation from Iowa State College with a Chemical Engineering degree.

Mr. Rice joined the silicone operation in 1952 after serving on various training assignments. He has been a silicone process engineer and a foreman for the reactor and distillation operation. He is a graduate of Michigan College of Mining and Technology, and he holds a master's degree from the University of Delaware.

GODFREY L. CABOT

Raymond P. Rossman has been appointed director of the newly-formed carbon black technical department, it has been announced.

Mr. Rossman is a graduate of South Dakota State School of Mines and Technology with a degree in Chemical Engineering. He holds a master's degree from M.I.T., and he did work as a research assistant there in the electrical engineering department before beginning his present association in 1937.

During his service with the firm he has been assistant sales manager and director of the firm's research and development laboratories in Cambridge, Mass. Randolph Antonsen has been named director of the firm's newly-formed new products research and development department, it has also been announced.

A graduate of M.I.T. with a master's degree in Chemical Engineering, Mr. Antonsen joined the company in 1945. He had been plant manager of a subsidiary firm before joining the research and development staff as a liaison engineer. He later headed the process design and economics section, and was appointed manager of research for the research and development laboratories in 1953.

E. M. Dannenberg has become director of carbon black research for the firm, it has been announced.

Mr. Dannenberg is a graduate of M.I.T. with a degree in Chemical Engineering, and has been a research associate there for three years.

He joined the company in 1945 as a research chemist in the research and development department, becoming a group leader in 1946, and associate director of research in 1953.

Dr. W. R. Smith has been appointed associate technical director in charge of international research liaison and consultant in fundamental carbon black research, it has also been announced.

Dr. Smith received bachelor's and master's degrees at the University of Massachusetts, and a Ph.D. from Harvard in 1935. Prior to receiving his doctorate, he had been a research associate and teaching fellow at Harvard.

He joined the firm in 1936 as chief research chemist, and was appointed associate director of research in 1953. He is a world authority on carbon black and rubber reinforcement.



SHELL CHEMICAL

D. S. Herr, director of the technical service laboratory in Union, N. J., has switched assignments with F. S. Swackhamer, manager of the sales development department, chemical sales division, it has been announced.

The exchange of positions was made to give each a broader background of experience.

Dr. Herr, who holds a Ph.D. in Photochemistry from the University of Rochester, has been with the company since 1946, when he became assistant chief chemist at the Martinez, Calif... plant. He became chief chemist at the Union laboratory in 1949, and its director in 1952.

Mr. Swackhamer joined the company as a senior technologist in its main office in New York in 1948. He has

been assistant department manager of the sales development division, and manager of resins and plastics. holds a master's degree from Brooklyn Polytechnic Institute.

BAKER CASTOR OIL

A. M. Lipscomb has been named to the firm's Pacific Coast sales staff, it has been announced. He will be based at the Los Angeles office, and will handle sales and technical service in southern California.

Mr. Lipscomb has received a B.S. in Chemistry from Tulane University, and had been employed by the western division of Firestone Tire & Rubber Co. as an applications chemist for four years, and as assistant manager of quality control before his present association.

NEW JERSEY ZINC

Bruce R. Silver, technical assistant to the vice president, has retired from



B. R.

than 35 years of service, it has been announced. Mr. Silver be-

the firm after more

gan his career with the firm as a sales engineer in 1922, and became district sales manager of the Cleve-

Silver land office five years later. He served for more than 20 years as manager of technical service before receiving his final promotion in 1953.

He is a graduate of New York University, and was Austin Teaching Fellow in Chemistry at Harvard from 1916 to 1918. He was an associate of Thomas A. Edison during World War I, when he worked on submarine detection and camouflage techniques.

UNITED GILSONITE

John Williams, Jr., has become technical director of the firm, it has been announced.



J. Williams

Mr. Williams has been in the paint industry for 25 years. He has been associated with E. I. duPont de Nemours & Co., Inc., in the pigments and paint division, and he has served as

chief chemist with the Thomson-Porcelite Paint Co.

He has also been affiliated with the Calbar Paint and Varnish Co. as technical director. He is a member of the American Chemical Society, and is active in the Philadelphia Paint and Varnish Production Club.

AMERICAN CYANAMID

John H. Dietze has been named central regional sales manager for the



pigments division, it has been announced. He replaces Kenneth A. Coate, who has transferred to an assignment in Los Angeles.

Mr. Dietze has been with the firm since 1947, when he graduated from Yale

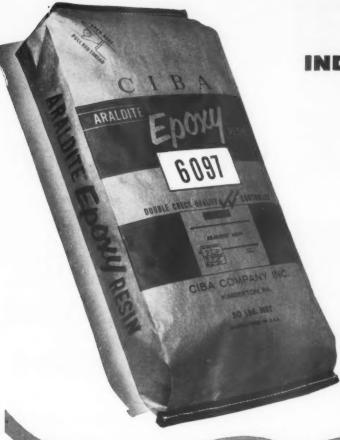
University. He has been manager of export and sales development for the pigments division, and has held numerous field sales posts.

His headquarters will be at 3505 N. Kimball Ave., Chicago.

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	No Cloud For At Lond Of		No Clo		nently	Permanently		Hours	No Cloud For At Least 96 Hours	ud For At	No Clo		Mineral Spirits 1:10
Dark Brown	6	Max.	rald	Emerald Green	00	9 Max.	15	16	Violet	Blue-Violet	00	Max.	Color (Gardner)
0.1219 0.1176 0.1198	0.1250	0.1258 0.1235	0.1156	0.1176	0.1287	0.1298 0.1274	0.1224	0.1236 0.1206	0.1224	0.1242 0.1212	0.1028	0.1036	(Gal./Lb.)
0.984 1.020 1.002	0.9604	0.9544 0.9723	1.038	1.020	0.9327	0.9244	0.9843	0.9723	0.9820	0.9675	1.167	1.158	Specific Gravity (77°F)
8.20 8.50 8.3	8.00	7.95	8.65	8.50 8.75	7.77	7.70	8.19	8.09	8.17	8.05	9.72	9.65	Lbs./Gal. (77°F)
72 Max.	53	Max.	78	80 Max.	55	Max.	67	70 Max.	60	Max.	67	Max.	% Non-Valatile
111	A-2	A Max.	W	Z Max.	G	Max.	71	Max.	00	Max.	A-1	Max.	Viscosity (Gardner)
pup Q 3'	8.0	7.9 8.1	8.0	7.9 8.1	4.0	3.9	6.0	6.1	6.0	6.19	24.0	23.9	% Metal
21/ 100	Typical	Spec.	Typical	Spec.	Typical	Spec.	Typical	Spec.	Typical	Spec.	Typical	Spec.	
JAN.	JD S	8% Zinc Naphthenate	opper	8% Copper Naphthenate	acium	4% Calcium Naphthenate	nganese	6% Manganes Naphthenate	6% Cobalt Naphthenate	Mapht	24% Lead Naphthenate	Napht	MATERIAL

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NORTON & SON

Benjamin S. Locko has been elected vice president in charge of research and

development, it has been announced.



Mr. Locko is a graduate of the College of the City of New York, and did graduate work in Chemistry and Physics at Manhattan College. He

began his career with the Muralo Co., an associate firm, in 1941, and joined the parent organization in 1953.

He is a member of the American Chemical Society and a Fellow of the American Institute of Chemists.

DOW

J. R. Stein has been named general manager of the firm's Louisiana division facilities under construction at Plaquemine, 10 miles south of Baton Rouge, it has been announced.

Mr. Stein has been project manager of the new division since construction of facilities began in 1956. He will have complete responsibility for all operations.

He has been with the firm since 1937, when he graduated from the University of Michigan with a degree in Chemical Engineering. He has been associated with organic research and production engineering, and has also done work in production control.

SEYMOUR OF SYCAMORE

Klaus H. Boerner has become assistant to the president of the spraypaint manufacturing firm, it has been announced.

Mr. Boerner's duties will consist of sales and administrative work. He is a graduate of Yale University, and has done commercial color photography in San Francisco.

COLTON CHEMICAL

James K. Ames has become central district sales manager, it has been an-

nounced by Bernard dent.

R. Krashin, presi-Mr. Ames had formerly been Chi-

cago district manager. He is a graduate of John Carroll University with a B.S. in Chemistry. He has had labora-

tory experience as a chemist for Willard Battery Co., and sales experience with Wyeth, Inc., and Charles Pfizer Co.

He began his present association as a technical service representative.

COLUMBIAN CARBON

Emory D. Seles has joined the firm as a technical service engineer, it has been announced.

Mr. Seles is graduate of Rutgers University with a bachelor's degree in Chemistry. He has had four years of experience in research and development with Socony Paint Products Co. He



E. D. Seles

will be concerned with the application of pigments in paints, inks and plastics.

He is a member of the American Chemical Society and its Division of Paint, Plastics and Printing Ink Chem-

Ben J. Trombetta has been promoted to the position of assistant to the sales manager, according to an announcement by Charles R. Schroth, sales manager of the firm.

Mr. Trombetta joined the firm's sales service department in 1949 when it was the Peerless Printing Ink Co., and was later promoted to supervisor of the technical service laboratory.

He studied Chemical Engineering for three years at Drexel Institute of Technology, and subsequently received a B.S. in Chemistry from LaSalle College.

Mr. Trombetta is a member of the American Chemical Society, an associate member of the S.P.E., a member of the technical committee of the N.A.P.I.M., and a member of the Philadelphia Ink Production Club.





Complete copies of any patents or trade-mark registration reported below may be obtained by sending 50c for each copy desired (to foreign countries \$1.00 per copy) to the publisher.

Wax and Methyl Polysiloxane Coating Compositions

U. S. Patent 2,807,554. Roger Henri Bernard Serey, Paris, and Pierre Pascal Peyrot, Lyon, France, assignors to Societe des Usines Chimiques Rhone-Poulenc, Paris, France, a French body corporate.

A coating composition comprising a

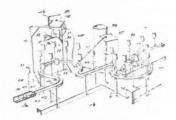
substantially uniform admixture of a waxy composition, containing at least one wax selected from the class consisting of paraffin wax, carnauba wax, beeswax, montan wax, white wax, Japan wax and oxidised and nonoxidised crystalline and microcrystalline waxes, from 1 to 40% by weight of said waxy composition of at least one methyl polysiloxane selected from the class consisting of methyl polysiloxane oils and resins, and 0.5 to 20% by weight of said waxy composition of triethanolamine titanate.

Apparatus For Spray Coating of Articles

U. S. Patent 2,808,343. Charles Curtis Simmons, Skokie, Ill., assignor to Ransburg Electro-Coating Corp., a corporation of Indiana.

A method for electrostatically spray coating a plurality of articles from ex-

teriorly thereof comprising, providing an electrode, bodily and sequentially transporting articles in a looped path to simultaneously position a plurality of such articles around and substantially equidistant from said electrode, creating an electrostatic field extending between said electrode and said articles, and introducing atomized liquid coating material particles into said field for movement from adjacent said electrode to the articles to be electrostatically deposited thereon while maintaining the articles around said electrode, simultaneously to apply coating material to said articles.



U. S. Patent No. 2,808,343

Wax Composition

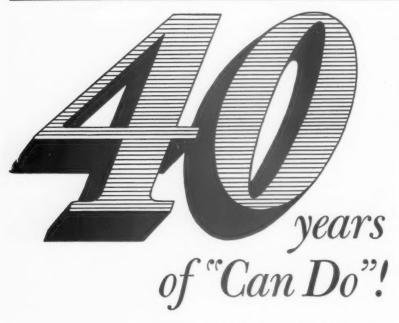
U. S. Patent 2,807,524. John D. Tench, Prospect Park, Pa., assignor to Sun Oil Co., Philadelphia, Pa., a corporation of New Jersey.

A new composition of matter consisting essentially of a major proportion of paraffin wax and from 0.01% to 20% bis-cyclopentadienyl iron.

Coating Composition

U.S. Patent 2,809,119. David K. Lesser, Wilmington, Del., assignor to Hercules Powder Co., Wilmington, Del., a corporation of Delaware.

As a new composition of matter, an improved coating composition consisting essentially of a lacquer-in-water dispersion of visibly discrete colored lacquer particles in an aqueous dispersing medium containing from about 0.1% to about 3% by weight of watersoluble lower alkyl cellulose ether as a suspension stabilizer, said aqueous dispersing medium having a viscosity from about 10 cps. to about 5,000 cps., said colored lacquer consisting essentially of from about 20% to about 50% by weight of organosoluble coating material other than nitrocellulose at least partially miscible with nitrocellulose, a small amount from about 1% to about 10% by weight of nitrocellulose sufficient to materially increase the stability of the coating composition, and volatile organic solvent, said organosoluble coating material and said nitrocellulose being dissolved in said volatile organic solvent. the ratio of said nitrocellulose to said organosoluble coating material being not more than about 5 parts nitrocellulose to about 20 parts of organosoluble coating material.



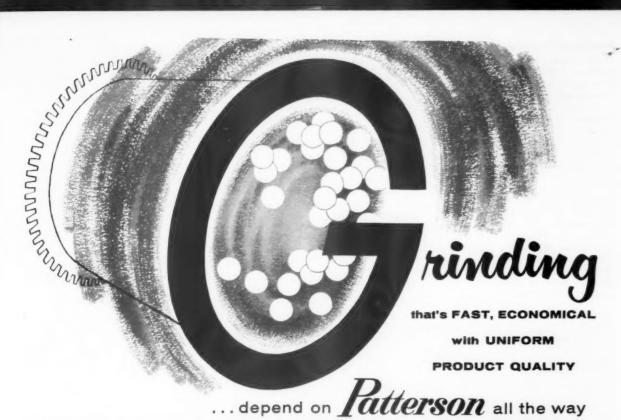
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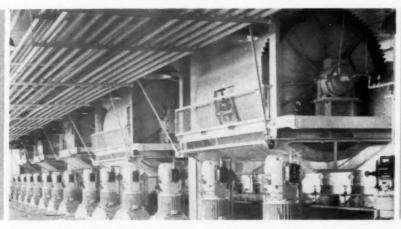
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Efficient materials handling is typified in this installation of forty-eight pebble mills and mixers at W. P. Fuller & Company, San Francisco. Mills are charged from the floor above and discharged directly into mixing tanks below.



Consistent high product quality in shorter grinding time—at lower cost! This is the net of Patterson Pebble Mill performance, integrated with specific customer operations by Patterson Engineering Service. • The factors of efficient materials handling, optimum mill speed, correct ball and material charge are vital to quality and profits. Let us relate Patterson Mills and engineering to your most exacting grinding requirements. Write for a prompt consultation.



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Zein Water Emulsion

U. S. Patent 2,810,656. Clifford J. McDowell, Library, Pa., assignor to Corn Products Refining Co., New York, N. Y., a corporation of New Jersey.

A substantially neutral aqueous zein emulsion of the thin "oil in water" type consisting of 100 parts of zein emulsified in a mixture of at least about 40 parts of a water insoluble plasticizer selected from the group consisting of hydrogenated rosin, mixture of ortho and para N-ethyl toluene sulfonamides, tricresyl phosphate, oleic acid, tall oil, xylene, and butyl acetate, and 10 to 15 parts of ammonium soap, 10 to 40 parts of volatile organic non-zein solvent selected from the group consisting of xylene, propylene glycol and butyl acetate and 150 to 200 parts of water, said parts being by weight.

Dual Purpose Tinting Base

U. S. Patent 2,809,122. Victor M. Willis and Harvey T. Gehring, Chicago, Ill., assignors to The Sherwin-Williams Co., Cleveland, Ohio, a corporation of Ohio.

A tinting base for use in decorative coatings which comprises in combination from 35% to 60% by weight of a water insoluble pigment, from 5 to 30% by weight of a nonionic surface active agent selected from the class consisting of alkyl polyoxyalkylene ethanols and alkyl phenoxy polyoxyalkylene ethanols wherein the alkyl group is a C4 to C10 hydrocarbon, the polyoxyalkylene groups number from 8 to 50 and are in turn selected from the group consisting of ethylene and propylene oxide adducts, and from 15 to 50% by weight of diacetone alcohol.

Vinyl Halide Resins

U. S. Patent 2,811,496. Charles J. Knuth, Flushing, N. Y., assignor to Chas. Pfizer & Co., Inc., Brooklyn, N. Y., a corporation of Delaware.

A plastic composition comprising a vinyl halide resin and a compound having the structure



wherein R is a C_1 to C_8 alkyl group and R' is selected from the group consisting of an alkyl group, an aryl group and an aralkyl group. The compound constituting from about 10 to about 50% by weight of the composition.

Silicate Paint Vehicle

U. S. Patent 2,807,552. Edward A. Robinson, South Euclid, and Carl W. Fuller, Jr., Painesville, Ohio, assignors to Diamond Alkali Co., Cleveland, Ohio, a corporation of Delaware.

In a method for preparing a silicate paint vehicle, which includes the reaction of an alkali metal silicate to form silic acid and the combination therewith of further alkali metal silicate, the improvement which comprises diluting an alkali metal silicate with water and adding this dilute silicate solution to a sufficient quantity of strong mineral acid to produce a silica sol, maintaining said acid solution at a pH below 3 at all times during the addition, adding said acid solution to a solution of alkali metal silicate while maintaining the pH of said solution of alkali metal silicate at all times during the addition, at a pH above about 9.

Vinyl Chloride Polymers

U. S. Patent 2,811,498. Joseph Farrell Weiler, Elkins Park, Pa., assignor to Olin Mathieson Chemical Corp., a corporation of Virginia.

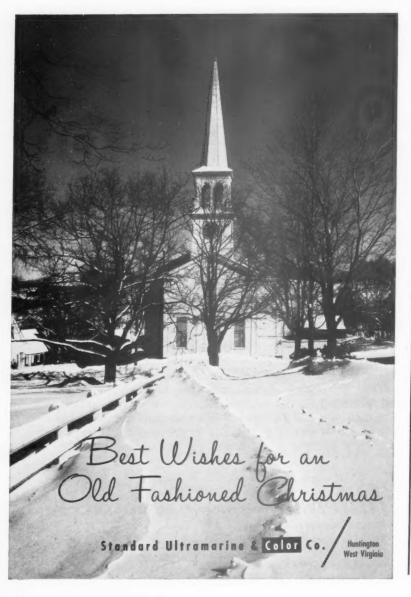
A plastic composition comprising a vinyl chloride polymer and a plasticizer which is a polychloro-di-tertiary-butyl-benzene compound containing at least about 40% chlorine.

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Patent Practice before U. S. Patent Office. Validity and Infringements Investigations and Opinions.



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XX-50	SPICULES MULTI-FACETS JACKS	MEDIUM LARGE	15
XX-55	SPICULES MULTI-FACETS JACKS	MEDIUM	17
XX-503	ROUNDS	LARGE	11
XX-505	SPICULES MULTI-FACETS	MEDIUM LARGE	18
XX-601	ACICULARS	MEDIUM LARGE	14

LEADED

GRADES	WHITE LEAD CONTENT %	PARTICLES	OIL DEMANDS
Lehigh-6	35	CO-FUMED	12
Lehigh-61	35	BLENDED	14
Lehigh-635	35	ACICULAR	13
Lehigh-250	50	BLENDED	12

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Du Pont Survey Reveals Trend to Spray Paints

A rise in sales of pressurized spray paint in the next few years has been forecast by E. I. du Pont de Nemours & Co. Annual sales of 75 to 100 million units were said to be probable by 1967.

The company's "Freon" products division has based growth estimates on a nationwide survey among householders. The survey revealed that sales of paint in halfpint and smaller cans have decreased over the last five years, while in the same period sales of aerosol paints have increased 500 per cent.

Pressurized spray paints sold 22.5 million units in 1956. Smaller-sized paint cans are estimated to account for five to 10 per cent of the current consumer market for paint. The survey revealed that once users have tried aerosol paint, they prefer it two-to-one over the brush method of application.

The survey pointed up the need for considerably more promotion and education at the consumer level by indicating that only 36 per cent of consumers had ever heard of paints, enamels or lacquers in spray cans. Of the 36 per cent, only 15 per cent had actually used aerosol paint.

Principal reasons given by consumers for their preference of aerosol paint were ease of use and application, lack of messiness, even spreading and quick-drying qualities.

Of those who preferred the brush method, 58 per cent said they found difficulty in controlling the spray, while 36 per cent felt spray paints are too expensive.

New Celanese Operations

Celanese Corp. of America has announced the beginning of construction of a new manufacturing unit at its Belvidere, N. J., plant to increase production of polyvinyl acetate emulsions now manufactured at the Linden, N. J., plant.

Production of the emulsions is a new activity for the Belvidere plant, which turns out cellulose acetate and cellulose propionate molding powders and cellulose acetate extruded and cast film.

Also announced was the beginning of operation of a new polyolefin pilot research laboratory designed to step up investigation of the possibilities of creating new tailored-to-order plastics and fibers made of predesigned molecules.

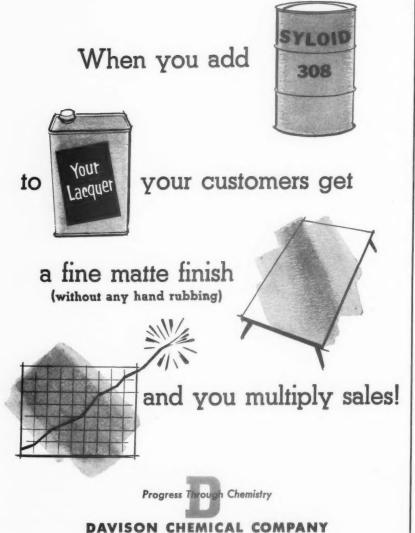
The new research unit is at the Summit, N. J., central research laboratories.

Nopco Trainee Wins Award

Lawrence O. Strange, sales trainee in the industrial division of Nopco Chemical Co., has received an award from the Sherwin-Williams Co. for a thesis written during his senior year at High Point College, High Point, N. C.

The award was presented by Dr. E. O. Cummings, head of the college Chemistry Department, for the thesis on "A Study of the Formulation of High Solids Furniture Finishes."

On page 71 of the October issue of Paint and Varnish Production the caption, "Fig. 31. Rich-Roth Ultra-Viscon" should read Fig. 31 Bendix Ultra Viscoson.



Division of W. R. Grace & Co. Baltimore 3, Maryland

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Synthetic Latex Plant Expanded by Goodyear

Goodyear Tire & Rubber Co. has announced completion of new production facilities which will boost rated capacity of the firm's synthetic latex plant at Akron, Ohio, to 27,500 tons annually.

The facilities were constructed at a cost of approximately two and three-quarter million dollars, according to E. J. Thomas, Goodyear president.

One of the main features of the plant expansion is the addition of 10 reactors, each with a capacity of 3,750 gallons. In addition, a new recovery area consisting of two butadiene and two styrene recovery columns has been constructed to handle the increased production.

Latex storage facilities, which have been increased more than 200 per cent, form another important part of the expansion.

Originally opened in 1942, the installation was built and operated by Goodyear for the government, and was the first of the nation's synthetic rubber plants to go into full production.

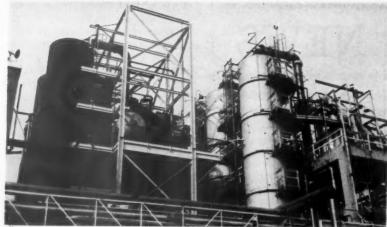
With the 50 per cent increase in capacity provided by the recent expansion, the plant becomes the world's largest synthetic facility devoted exclusively to the production of high solids latex.

Minnesota to Paint Towns

"Painting the Town" has become a project of the Minnesota centennial celebration, it has been announced by Governor Orville L. Freeman.

Several communities have already laid plans for brightening and color-coordinating their business districts with paint, the Governor said.

The project was presented to the Centennial Commission by Archer-Daniels-Midland Co. ADM will provide nearly \$2,000 in prizes for Minnesota communities doing the best job of painting their main streets.



A vast maze of pipes and towering butadiene and styrene recovery columns characterizes the Goodyear Tire and Rubber Co.'s newly-enlarged synthetic rubber latex plant at Akron, Ohio, now the world's largest synthetic plant devoted exclusively to production of high solids latex.



TANDALTA TARANTA PARAMENTA DA PARAMENTA PARAME

Celanese Opens Texas Acrylate Ester Plant

Celanese Corp. of America has announced the beginning of operations at its new 15 million-pounda-year acrylate ester plant at Pampa, Texas. The firm has begun tank car shipments from the plant.

With the new facilities, Celanese becomes a major source of acrylate esters, a rapidly growing family of petrochemicals used in the paint industry. Celanese also supplies the industry with vinyl acetate.

Production at the new plant marks the first use of a new method for making acrylate esters discovered by B. F. Goodrich Co. The process, developed by Celanese from basic Goodrich findings, utilizes acetic acid and formaldehyde, and is reported to be more economical than other processes.



Continuous synthesis and purification of acrylate esters takes place in these distillation towers at Celanese Corp. of America's new plant at Pampa, Texas.

Celanese reported that consumption of acrylate esters has doubled since 1954 and is expected to double again by 1960, owing in large measure to the increasing use of acrylic polymers in water-thinned latex paint.

Celanese officials say there is a growing trend toward formulating paint based on polymers made of combinations of monomers in which acrylate esters will play an increasingly important role.

Immediate production at Pampa, according to Richard W. Kix-Miller, vice president and general manager of the chemical division, will include methyl, ethyl and butyl acrylates, but the company is also proceeding to develop markets for the higher esters of acrylic acid.

Show Names Advisory Board

The National Chemical Exposition has announced the appointment of 12 outstanding chemists and executives to the advisory board of the 10th show, scheduled for September, 1958 in Chicago.

Included among those who have accepted appointments are: T. H. Coulter, Chicago Assoc. of Commerce & Industry; Lawrence Flett, consultant; J. H. Forrester, Amoco Chemicals Corp.; T. L. Gresham, A. E. Staley Mfg. Co.; J. E. Hull, Mfg. Chemists Assoc., and S. D. Kirkpatrick, McGraw-Hill Publishing Co.

Also included are: H. A. Marple, Monsanto Chemical Co.; W. J. Murphy, ACS Applied Chemistry Journals; G. L. Parkhurst, Standard Oil Co. of California; C. F. Rassweiler, Johns-Manville Corp.; E. H. Volwiler, Abbott Laboratories, and Donald Williams, Dow Chemical Co.

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wt/gallon...7.45

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Inventors Council Seeks Answers to Paint Problems

White paint which will withstand aerodynamic heating to temperatures of between 1000° and 1700° F. is urgently needed by the Armed Forces, according to the National Inventors Council, U. S. Dept. of Commerce.

The paint should return to good visible and photographic color after cooling, the announcement said.

Frictional stresses which tend to remove the paint film may be as serious a problem as actual heat resistance, the announcement warned.

John C. Green, director of the Office of Technical Services, said, "The Government hopes that technicians in the paint industry may already have the answers to these problems. If anyone outside the Government thinks he knows the right approach, we hope he will mail the Council his findings immediately."

Corrosion protective coatings is another problem for which the Government seeks solution. In this field, compounds or materials are needed which may be applied simply and easily in the field to new or repaired aircraft materials to prevent corrosion.

Engine preservatives are also needed, according to the announcement. Materials should be able to protect components of engines, transmissions, hydraulic systems and other equipment for a minimum of ten years, and should be easy to remove.

Also needed is paint containing the qualities of high reflectivity of thermal radiations suitable for use on airplane exteriors. The paint must be highly resistant to heat.

Copies of the publication, "Inventions Wanted by the Armed Forces" may be obtained from the National Inventors Council, U. S. Dept. of Commerce, Washington 25, D. C.

ADM Increases Grants

Archer-Daniels-Midland Co. has announced that it is providing science fellowships and scholarships at 14 colleges and universities. Individual grants are to range up to \$2,500 per year.

The ADM student award program has been expanded recently with the creation of a new chemistry scholarship at Mankato State College, Minnesota.

Seventeen students are now studying under the firm's scholarship and fellowship program. ADM has provided 107 grants since it began its program five years ago.

Thomas L. Daniels, ADM president, said that a large share of the responsibility for maintaining the United States' position in scientific development rests with business. He said that industry has an obligation to assist students in completing their educations.

Antara Names Distributor

Western Solvents & Chemicals Co. of Detroit, Mich., has been appointed distributor for IGEPAL nonionic surfactants, it has been announced by James M. Cloney, sales manager of Antara Chemicals.

Drum stocks of the surfactants will now be available at Western's warehouse and bulk depot. The firm will handle distribution in Detroit and eastern Michigan.

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Sward tested and proved Cargill Polyurethane #101 was tested for dry and Sward hardness with films laid down at 3 mils wet film thickness on glass. After 24 hours it had a Sward hardness of 12 (glass equals 100); after seven days it had a Sward hardness of 24; and after two weeks, it had a Sward hardness of 32. How this compares with other materials is shown in the complete brochure offered in the coupon below.

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Paint Firm on TV

Sinclair Paint Co. of Los Angeles was featured on television recently. The firm's story was presented on KTTV's live half-hour "Success Story" program which covers outstanding industries in southern California.

TV rating services reported that nearly a quarter-million people watched the show, which is sponsored by Richfield Oil Co.

The show was done from the Sin-

clair plant in East Los Angeles. "Success Story" host Ken Peters toured the plant from raw material storage to finished goods warehouse, interviewing members of the firm's executive staff and factory force.

All manufacturing operations shown on the program were actually being carried on at the time of the telecast.

Gulf Coast Groups Meet

Immediate and long-range prospects for Gulf Coast petro-chemicals were explored by leaders of the chemical and petroleum industries at a joint meeting of the Commercial Chemical Development Assoc. and the Chemical Market Research Assoc. in Houston, Texas, last month.

In the first session of the meeting on November 20, economic trends in the Gulf Coast area and the importance of inorganic chemicals to over-all production were discussed.

The second session on November 21, dealt with the petroleum industry, the comparative use of hydrocarbons by the chemical and petroleum industries and the more important organic chemicals produced on the Gulf Coast.

Adhesives Firm Acquired

The acquisition of Federal Adhesives Corp. by Morningstar, Nicol, Inc., has been announced. Key personnel of the Federal organization have become members of the Moningstar firm.

The affiliation includes Adex Mfg. Co., a Baltimore affiliate of Federal, and Federal Latex Corp. and Federal Chemicals Corp.

Federal Adhesives Corp. manufactures specialty adhesives. Federal Latex manufactures rubber latex compounds, and Federal Chemicals manufactures industrial chemicals and vinvl plastisols.

Research, technical and production facilities of both organizations have been combined. Paisley Products, Inc., a Morningstar subsidiary which manufactures adhesives, polyvinyl acetate resin emulsions and chemical specialties, operates plants in New York, Chicago, St. Louis, Los Angeles and Redwood City, Calif.

Michael J. Merkin Honored

Michael J. Merkin, president of the M. J. Merkin Paint Co., was guest of honor at the annual Paints and Chemicals Division dinner held last month on behalf of the Federation of Jewish Philanthropies.

The testimonial to Mr. Merkin was held at the Plaza Hotel. Irving Fein of Fein's Tin Can Co., chairman of the industry drive, said the testimonial was in recognition of Mr. Merkin's tireless efforts for the good of the industry and all worthy philanthropy.

Mr. Merkin is a member of the budget and finance committee of the National Paint, Varnish & Lacquer Assoc. He has been active in Red Cross, U.S.O. and Greater New York Fund drives.





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FEDERATION

(From page 45)

inroads made in the traditional markets by "competive materials"—surface covering materials.

President Battley emphasized that the paint industry has become a highly-specialized industry and this is due to the imagination and energy that go into our research, development, promotion and sales. But we cannot sit back now and try to fight a strictly "holding our ground war" as competitive materials make further dents in the paint market. To combat this trend, the National Paint, Varnish and Lacquer Association will shortly embark on a greatly enlarged and accelerated public relations and publicity campaign to bring the merits and use of paint and chemical coatings to a greater number of people and in a more effective form than ever before. The primary theme being that there is no surface that cannot be deccrated and protected

more easily, more effectively, and at a lower cost with paint than with any other product.

Panel Discussions

Two panel discussions were presented at this year's meeting. One covered Material Handling and was concerned with storing raw materials, automatic handling of pigments, automatic filling and labeling, etc.

The other panel discussion dealt with "An Approach to Formulation and Control". Here the application of statistics was discussed in designing experiments, in quality control, in testing, etc.

Nine constituent club papers were presented plus papers on Adhesion and Adhesives, Solvent-Free Epoxy Amine Systems (Sponsored by FATIPEC), and the Development and Use of the Sand Grinder.

Four papers were presented in the Roon Foundation Award Group. This award was established this year by Leo Roon, former president of Nuodex Products Co. The winning papers were: Class A—1st Prize (\$450)—A solvent Formulating Chart by Harry Burrell of the CDIC Club. No 2nd Prize in the Class A group. Third prize — (\$175) — Chemistry and Theory of Polyurethane Coatings by Harry Pansing of the CDIC Club.

Open Competition—1st and 2nd Prize (share \$700)—"Effect of Solvent Properties on the Viscosity of Alkyd Resin Solutions" by W. W. Reynolds and H. Gebhard, Jr., Shell Oil, Wood River, Ill., and the "Use of Hexylene Glycol and Other Solvents in Styrene-Butadiene Latex Paints" by R. W. Tess and Robert D. Schmitz, Shell Development Company, Emeryville, Calif.

3rd Prize (share of \$175.00)—
"Correction Factors Applied to the
Carothers Equation for Condensation Polymerization" by R. F.
Carmody, Socony Paint Products
Company, Metuchen, N. J., and
"A Mathematical Analysis of the
Precision in Determining Hiding
Power" by Parker Mitton, National Lead Co., South Amboy,
N. J.

New Officers

President—Joseph W. Tomecko of the Toronto Club.

President-Elect—H. G. Scholl of the Baltimore Club.

Treasurer—Ray C. Adams of the Southern Club.

Executive Secretary—C. Homer Flynn.

Next year's annual meeting and Paint Industries' show will be held in Cleveland, October 5-9, 1958.

Paint Industries' Show

As usual high interest was displayed at this year's show. This was evidenced by the numerous paint technologists crowding the exhibitors' booths seeking information on new products, developments, techniques, and to discuss problems of mutual interest.

Raw materials first offered at this show include polyurethane and isocyanate coatings, acrylic copolymer emulsion for water based paints, anionic emulsion for a hydrocarbon copolymer, higher solids acrylic emulsion, alkyd emulsions, pentaerythritol in pellet form, curing agent for epoxy resins.

In the way of equipment, a new heavy duty disperser-mixer unit was first displayed.





presented at the September 8-13 meeting of the American Chemical Society, Division of Paint, Plastics and Printing Ink Chemistry, in New York, N. Y.

Test for Compatibility Of Epoxy Fatty Esters

By T. W. Findley, F. E. Kuester and L. Chandler, Swift & Co., Chicago, Ill,

Electron irradiation has been used as an accelerated aging test for emphasizing the main defect common to the different types of fatty epoxy plasticizers for poly(vinyl chloride): incompatibility on aging as shown by bleeding and the accompanying stiffening due to loss of plasticizer. The irradia-tion takes only a matter of minutes. Observation for bleeding starts within an hour and is complete within a few days.

Each of the main types of epoxy fatty acid esters has been studied under conditions which aggravate the bleedingnamely, used with no other plasticizer and with no other stabilizer. Use of the test is exemplified also in determining the levels of primary plasticizer which should be used and in evaluating stabilizers to eliminate the danger of bleeding and still obtain maximum benefits from the fatty epoxy ester.

The test should also prove useful in developing new epoxy fatty esters which show better compatibility upon aging.

Radiation Chemistry

By W. H. Beamer, Radiochemistry Laboratory, The Dow Chemical Co.. Midland, Mich.

This introductory paper consists of three parts:

A discussion of principles of the interaction of high energy radiation with molecules. This includes the action of the primary radiation in releasing electrons within the material, the formation of "spurs" of activated molecules, and the kinds of ionization tracks created by $\alpha \beta$ and γ radiation. The radiation chemistry of water is used as an example and it is shown that the products may be explained by this track idea. In many radiation-induced reactions, including grafting of polymers, the dose rate is important.

Definitions of some of the terms generally used in radiation work, including dosage units, basis of dosage measurement, and G.-values.

A summary of radiation sources used

in the study of radiation chemistry of polymers. This includes several types of accelerators and radioactive sources and lists advantages and disadvantages for research work and possible future large scale uses.

Metal Surface Effects On Adhesive Bonds

By J. M. Black and R. F. Blomquist, Forest Products Laboratory, Madison,

A study was made of the effects of different metal surfaces on the resistance of adhesive bonds to aging at temperatures up to 550°F. Evidence is presented to show accelerated thermal deterioration of some organic adhesives by certain metals and inhibitive or stabilizing effects by other metals. The relation of chemical structure of the adhesive to thermal resistance is thus shown to depend to a significant degree on the metal adhered. Changes in the chemical structure of the adhesive polymer with exposure to high temperatures were observed by means of infrared absorption studies of films.



Plasticizing Performance In Epoxy Esters

By R. M. Brice and W. M. Budde, Archer-Daniels-Midland Co., Minneapolis, Minn.

Nine relatively simple epoxyesters were synthesized in our laboratories by practical preparative procedures. Although reasonable and consistent care was exercised in their preparation and in the choice of starting materials, they by no means represent the highest purity materials attainable. The following products were evaluated: allyl 9,10-epoxystearate; glycidyl oleate; glycidyl 9,10-epoxystearate; 9,10-epoxystearyl acrylate; vinyl 9,10-epoxystearate; ethyl 9,10-epoxystearate; 9,10-epoxystearate; 9,10-epoxystearate acetived from butyl oleate and butyl elaidate.

Plasticizing performances were compared using materials of similar molecular weight in order to cancel out the known differences due to the size of the molecules. Poly(vinyl chloride) was plasticized at a 50 phr level with the afore-mentioned oxirane compounds, and the following properties of the film were determined: general compatibility, modulus, tensile strength, window exposure, low temperature flexibility, gasoline, oil and soapy water extractability, volatility, heat stability, and accelerated

ultraviolet light stability.

Some of the more outstanding differences noted were that glycidyl oleate is incompatible with poly(vinyl chloride), while allyl 9,10-epoxystearate appears to be an excellent plasticizer in most respects. Vinyl 9,10-epoxystearate and 9,10-epoxystearyl acrylate become incompatible when the stock is heated, while poly(vinyl chloride) containing allyl 9,10-epoxystearate exhibits good heat stability. Poly(vinyl chloride) plasticized with butyl 9,10-epoxystearate derived from butyl oleate is much superior in low temperature properties to that based on butvl elaidate.

Cross Linking Of Methacrylate Polymers

By R. L. Feller, Mellon Institute, Pittsburgh, Pa.

The action of ultraviolet radiation on certain thermoplastic resins of the methacrylate family has been shown to cause gradual loss of removability in solvents. Polymers based on methacrylic esters having hydrogen atoms located on tertiary carbon atoms in the alkyl radical of the alcoholic group are sensitive to cross linking under such radiation. A filter of ordinary window glass reduces the rate of cross linking by a factor of 1/1.9.

A technique of paper chromatography

is described which permits measurement of the extent of action by light during the earliest stages, before apparent failure of the film. This technique is used to demonstrate the effectiveness of substituted benzophenones upon the inhibition of cross linking in isoamyl polymethacrylate.

Studies of Adhesion Using Molecular Models

By Dean Taylor, Jr., and John E. Rutzler, Jr., Case Institute of Technology, Cleveland, Ohio.

Scale models of the surfaces of titanium and iron were constructed (1 cm. -1 A.) on the assumption that the surface layer is an oxide. Fisher-Hirschfelder-Taylor molecular models - 1 A.) of crystalline and (1 cm. noncrystalline, straight-chain polyethylene and poly(vinyl chloride) were constructed and fitted to the oxide surfaces of the metals in a way to obtain the maximum number of contacts between the oxygen ion in the surface of the metal and the -C-H dipole of the polymer, the adhesive strengths of the polymers to titanium and iron were calculated, taking into account the measured angles between the dipoles and the ions and the measured distances of separation. Calculated adhesive strengths are much closer to observed values than is usual for theoretical results in such systems.

Models of other polymers on these surfaces suggest that the way the adhesive fits on the surface of a metal controls both the type of interaction and strength of the bond formed.

Infrared Study of Vinyl Polymerization

By R. A. Spurr, B. M. Hanking and J. W. Rowen, Hughes Research Laboratories, Culver City, Calif.

Vinyl polymerization, exemplified by diallyl phthalate, has been studied with the aid of infrared spectroscopy as a function of temperature and catalyst concentration. It was found that the initial reaction could be conveniently followed by observing the absorption, at 1645 cm.-1, attributed to the stretch-



ing vibration. The initial reaction was second order with respect to monomer concentration and first order with respect to catalyst concentration. The Arrhenius activation energy was found to be 17,600 calories per mole. The fraction of reacted double bonds, C/C_0 , was related to α_c the parameter in the modified Flory gel equation. The data indicated the existence of a fraction of nonprecipitatable product believed to contain saturated cyclic structures. An expression is derived



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which related C/C_0 , catalyst concentration, temperature, and reaction time. This relationship may prove useful for study of polymerization occurring under a variety of conditions.

Frictional Electric Charge of A Spray

By George E. F. Brewer and Jerry Sevick, Marygrove College, Detroit, Mich.

The equipment for the measurement of the frictional electrification which accompanies the formation of a "spray," consists in an electrically insulated target, a set of standard resistors, and an electronic amplifier. The paint droplets which land on the target act as a constant amperage source within the limits of the experimentation. The quantity of so observed current depends upon a number of variables, of which the following were studied within the stated limits: (1) difference in level from paint pot to orifice (0 to 20 inches) preferred "height" 1 to 2 inches; (2) distance from orifice to target (10 to 21 inches), preferred distance 10 to 18 inches; (3) air pressure (15 to 32 pounds per square inch), no preference; (4) air-paint ratio (0.75 mg. solids collected per lb./sq. inch second to 1.5 mg./lb./sq. inch x second), no preference.

A certain baking enamel (viscosity 15 seconds, No. 4 Ford cup), when sprayed within the preferred limits, produced a positive electric charge of 2.96×10^{-11} coulomb $\pm 5\%$ per mg. of paint solid collected on the target. Other paint compositions, organic liquids, and aqueous solutions produced smaller or larger currents of either positive or negative polarity.

Mechanisms of the Adhesion of Polyethylene to Metals

By Frank J. Bockoff, E. Timothy Mc-Donel and John E. Rutzler, Jr., Fenn College and Case Institute of Technology, Cleveland, Ohio.

The role of oxidation in the adhesion of polyethylene to metals was investigated. Commercial polyethylene (meltindex 2) was found to exhibit low adhesive strength to stainless steel. Values obtained were in the neighborhood of a few hundred pounds per square inch. Controlled oxidation of the polyethylene resulted in adhesive bond strengths in excess of 2500 pounds per square inch, with cohesive failure. Possible mechanisms of the bonding of oxidized and unoxidized polyethylene to metal surfaces are discussed in some detail.

Abstracts of papers presented at the September 8-13 meeting of the ACS, Division of Paint, Plastics and Printing Ink Chemistry will be continued in a juture issue.



The J. H. DAY Co. Division of The Cleveland Automatic Machine Co.,
4922 BEECH STREET, CINCINNATI 12, OHIO



The author continues his random reflections on various aspects of the paint industry. The opinions expressed in this column are his alone and do not necessarily reflect those of this publication.

Modus Operandi

A T the paint convention in Philadelphia, several readers expressed curiosity concerning Operation Coating Corner. For these readers in particular, and for any others who might also enjoy the view, here's a brief glimpse of behind-the-scenes activity.

Conducting this column, incidentally, is strictly a personal hobby with me, totally independent of my regular job assignment. The opinions expressed, likewise, are mine and mine alone, and in no way reflect the opinions of either my employer or the publishers of this magazine.

Each month I scan a large number of journals and abstracts, and I copy or make a note of items that seem serviceable as a springboard for Coating Corner comment. Then I jot down whatever thoughts occur to me at the moment. Later each item is typed and placed in a special file.

Shortly before the copy deadline approaches, pieces for the upcoming issue are selected, according to length as well as subject matter, until there is just enough



Phil Heiberger

material to fit the magazine space allotted.

Occasionally a particular topic strikes my fancy and I do a little collateral reading. Writing the comment helps organize my thoughts and sometimes a subject seems of sufficient importance to warrant the devotion of an entire column to it.

As a rule, I tend to ignore (as column material) those paint magazines and chemical journals that would normally be read by people

in the paint field, and attempt in stead to spot, in books and journals somewhat off the beaten track paintwise, items of interest that might so easily escape their notice. "Cross-fertilization" of ideas is the general objective.

Column items rejected one month are tossed back into the file and re-examined the next, often re-written entirely. Some have the knack of getting into print promptly while others seem to be too short one month, too long the next, and strangely inappropriate the next. Sooner or later, however, sometimes after several revisions, most of the items eventually make the grade.

Now follows this month's selec-

Low Vs. High Budget Research

If you have a taste for a bit of controversy now and then (and who doesn't?), you may look with disfavor upon the general disappearance in recent years of the type of heated polemicals with which scientific literature used to be sprinkled liberally in the "good old days."

We, too, mourn their passing

from the scene, although in all fairness it must be stated that many of these diatribes were more fascinating from a human interest point of view than they were edifying from a scientific point of view, simply because neither protagonist in any given running argument had the benefit of present day knowledge. It was a field day for erroneous statements based upon defective experimentation, crude instrumentation and debatable reasoning, and delivered in the cocksure manner of the ignorant. But these scientists did the best they could, and this opportunity to air differences of interpretation and opinion was a healthy one.

Today's scientific literature, in contrast, is based upon elaborate instrumentation and loaded with statistical escape clauses which tend to make it infinitely more accurate but, alas! equally more drab. Nowadays, caution is king. Commitments are evaded and conclusions are heavily burdened with qualifying phrases such as "most likely," "probably," "within experimental error," etc. The old dashing, swashbuckling boldness is rarely in evidence.

Therefore, at first it was a distinct surprise and pleasure to read a paper in a major journal which began thus:

"A recent paper has claimed.....
The purpose of the present communication is to refute this claim
...."

Not wanting to take sides, further identification will not be made. Aside from adding a dash of pepper to otherwise dull journal fare, this brings us face to face with another serious problem.

The paper being criticized was based on a student's thesis in a university laboratory. The conclusions were based on acceptance of the validity of a limited number of available chemical tests. The error in the conclusion was detected in a large industrial laboratory equipped with expensive and highly specialized physical equip-ment. The refutation is undoubtedly justified. Yet, if we want to encourage creative research and subsequent publication at the university level, rough criticism such as this can hardly further our ends. It is more likely to embarrass both

students and professors under fire, and ultimately discourage publica-

Without the original research paper as a launching platform, the second more extensive investigation may never have been undertaken, and perhaps its eventual conclusion would have been lost to the scientific community. It seems to me that the effectiveness of the second investigator's contribution would in no way have been lessened had he begun thus:

"In continuing the investigation of by means of techniques, new data were obtained suggesting the correct mechanism"

Do you agree?

Hygrophotography

IN glancing through the table of contents of a recent journal, the title "Measure of Permeability of Plastic Material, Leather, and Similar Substances against Moistness and Water by the Hygrophotographic Method" struck me as pro ocative. Here was described a "quick, simple, and trustworthy method of testing the permeability of such materials against atmospheric moisture and water."

The author, J. Sivadjian, writing in the Journal of Polymer Science XXIV, 63-66 (1957) states that the "hygrophotographic method using our hygrosensitive plates and films enables them to test permeability quickly and very easily, and through the photographic procress, to show up vey small alterations of this property, as a function of composition, structure, and thickness of the various substances tested. . . ."

All very well, just what we want, so we read further. "If a sheet such as cellophane, must be tested, a decent size cylindrical glass container is filled with a specific quantity of water and the opening is covered with the sheet to be tested. A hygrophotographic plate, on the sensitive side, is then placed on the sheet and the time noted that it takes to obtain the print of a round spot on the plate."

Fine, we keep reading, we find illustrations, comparative data, photographs, we admit its value, but nowhere in the article is mentioned what is the hygrophotographic method?

Well, being rather curious, we refer to the cited references and find that if fully exposed, developed, fixed, and washed gelatin silver bromide emulsions are immersed in 3% mercuric chloride until the silver is completely bleached, then if the plate is further washed, and transferred to a 0.5% potassium iodide solution until the film is uniformly yellow, and then rinsed and dried, we obtain a hygrophotographic plate.

What is unique is that light causes the color to change to violet black, but atmospheric humidity restores the original yellow. Therefore the method apparently is to darken the plate by exposure to standard light and measure the recovery which is related to the transfer of moisture. Neat trick, what?

Magnetics

SURFACE defects such as poor leveling, flocculation, and sedimentation, are often observed in paints pigmented with iron oxides. In the past, such agglomeration defects were attributed to poor wetting or to electrostatic forces. Now K. Heinle, writing in the Deut. Farben-Z, 11, 217-26 (1957), has come up with a very plausible and perhaps even startling explanation. Iron oxides consist of two modifications, an alpha Ferric Oxide and a gamma Ferric Oxide, the latter being ferromagnetic. It is, therefore, not unreasonable to expect association due to magnetic attraction under conditions amenable to orientation.

The "long hairs" might study the problem further in a paper by J. D. Bernal et al (Nature 180, 645-7 [1957]), who investigated the shift from the cubic spinel-like magnetic gamma oxide to the hexagonal alpha oxide. They suggest that the transformation occurs by a shifting and restacking of already existing structures and not by recrystallization.

My hunch is that manufacturers of magnetic tape and oxides are well aware of this problem, but it won't hurt paint chemists to be alert to it also.

Season's Greetings

Best wishes for a healthy and happy 1958!



CLEANOUT VALVE

A four-page technical bulletin describes and illustrates Petrometer Corp.'s Safety Cleanout Valve for the safe removal of water and sludge from the bottom of storage tanks.

Construction features and operation and installation details are fully discussed. Diagrammatic sketches illustrate the function of the valve and the path of the water and sludge being removed.

The bulletin is available from Petrometer Corp., Dept. PVP, 43-22 Tenth St., Long Island City, N. Y.

VALVE LUBRICATION

A 19-by-24-inch, three-color chart containing maintenance and lubricating information for Rockwell-Nordstrom lubricated plug valves has been issued.

Made of heavy paper and equipped with metal edges, the chart is suitable for display on shop, engineering and maintenance office walls. It features detailed views of four types of valves, two-bolt cover, screwed gland, three-bolt and Hypreseal.

Also included is a table of recommended lubricants for oil, water, gas and chemical service, as well as complete instructions covering valve servicing. The chart may be obtained from Meter and Valve Division, Rockwell Mfg. Co., Dept. PVP, 400 N. Lexington Ave., Pittsburgh 8, Pa.

PIGMENT PROPERTIES

A four-page leaflet containing tabulations on pigment properties has been made available by Columbian Carbon Co., Dept. PVP, 380 Madison Ave., New York 17, N. Y.

The leaflet contains information on the properties of carbon blacks, colloidal dispersions, iron oxide pigments and bone blacks.

WET GROUND MICA

A study of the effect of platy wet ground mica on the density of the paint film has been issued by the Wet Ground Mica Assoc., Inc., 420 Lexington Ave., New York 17, N. Y.

The study shows that wet ground mica increases the density of the paint film. Tests using alkyd paint were made without mica and with mica in different particle sizes.

An optical method compared the density of paint film with the transmission of light from a central source. Paints whose surface reflectance or whiteness were close in the same range were used to maintain maximum comparability.

The bulletin is designated Technical Bulletin No. 32. A threering binder will also be furnished by the Association to facilitate keeping all Association bulletins for ready reference. A self-addressed label should accompany requests for the binder.

BUTADIENE

What is claimed to be the first technical manual ever to be printed on butadiene has been made available by Petro-Tex Chemical Corp., Dept. PVP, P.O. Box 2584, Houston 1, Texas.

The 42-page publication contains complete physical properties, polymerization data, chemical properties and detailed information on all principle reactions.

Also included is a series of six "family trees" showing the chemical structure of present and potential products resulting from various classes of reactions. The booklet cites some 286 literature references.

The publication is in two colors and is well-illustrated with photographs, charts, tables, graphs and formulas.

CLASSIFIED ADVERTISEMENTS

Rates: \$.20 per word, except those seeking employment, for which rate is \$.10 per word. Minimum:ten words. Address all replies to Box Number, c/o Paint and Varnish Production, \$55 Avenue of the Americas, New York 1, New York.

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Sales agents wanted to handle fungicide and mildew preventive compounds. Excellent commission. Box 130.



POLYVINYLPYRROLIDONE

A 48-page booklet on the high molecular weight polymer, PVP (polyvinylpyrrolidone), has been published by Antara Chemicals, General Aniline and Film Corp., Dept. PVP, 435 Hudson St., New York 14, N.Y.

The booklet describes chemical and physical properties and applications so far developed for PVP. Also described are film-forming properties, compatibility, stability, protective colloid action, crosslinking, detoxifying properties and physiological acceptability.

VISCOMETERS

A 16-page operating manual for Brookfield Viscometers has been made available by Brookfield Engineering Laboratories, Inc., Dept. PVP, Stoughton 36, Mass.

The two-color booklet diagrams and photographically illustrates the principles of viscometer operation and calibration. Instructions have been simplified so that untrained personnel may learn to operate the instruments in five minutes.

Manuals have been prepared for each of the various models of the firm's viscometers.

VARNISH TECHNOLOGY

A 32-page booklet on "Modern Varnish Technology" has been published by Hercules Powder Co., Synthetics Dept., Dept. PVP, Wilmington 99, Del., to give the reader a clearer understanding of what the more important oleoresinous systems are, what they will do and how they may be prepared.

The booklet contains basic information on varnish components, and presents methods of making oleoresinous varnishes. It lists and describes test methods for determining varnish properties, and presents a key chart for varnish applications using Hercules synthetic resins.

Also included in the well-illustrated booklet are a section on Hercules synthetic resins for varnish making, and an appendix which includes reference charts and tables.

FATTY ACIDS AND OILS

Specifications and compositions of more than 180 fatty acids, fatty acid derivatives and industrial oils are described in a new product catalogue prepared by the Chemical Division of Armour and Co., Dept. PVP, 1355 W. 31st St., Chicago 9, Ill.

The brochure lists typical applications for each of the chemicals.

PROCESS CONTROL

An eight-page illustrated article reports on recent significant developments in process control by analytical instrumentation.

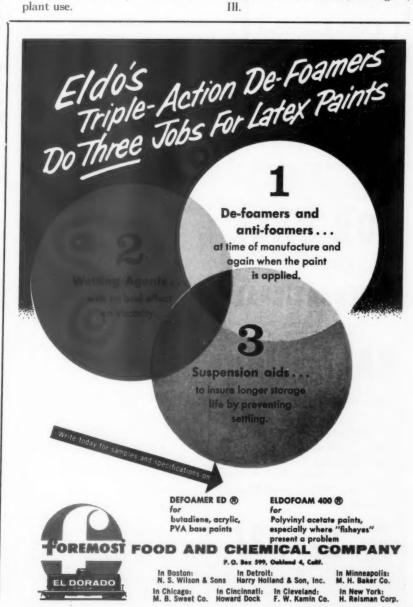
The paper examines Nuclear Magnetic Resonance and other new analytical processes as improvements in control and detection techniques. Analysis instruments still in the laboratory stage are evaluated for possible future plant use.

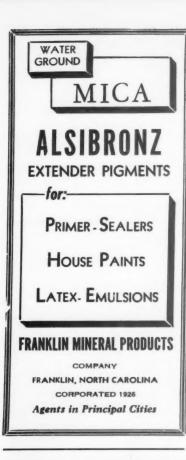
Non-spectroscopic methods and instruments are discussed. Also detailed are spectroscopic methods and techniques. The author points out that the Nuclear Magnetic Resonance technique has grown more rapidly than other types of radio-frequency spectroscopy.

Copies of the article by A. R. Aikman may be obtained from Schlumberger Well Surveying Corp., Dept. PVP, Ridgefield, Conn.

COLOR STANDARDS

A Color Standards Comparison Chart is being offered by Armour and Co. Chemical Division, Dept. PVP, 1355 W. 31st St., Chicago 9, III.





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Behr Machinery & Equipment Corp. 1112 Seminary Street, Rockford, III. The chart is an aid in quickly and accurately converting product color readings to a familiar scale. It has been developed over a period of four years of testing. It operates in the same manner as a slide rule, giving comparisons between five commonly used scales.

Among the scales included are Gardner 1933, American Public Health Assoc., National Petroleum Assoc., ASTM, American Oil Chemists Society Fat Analysis Committee and Lovibond, both 1" and 5½".

An indicator for identification of Armour fatty acids by name, composition and specifications appears on the back of the chart.

INDUSTRIAL TRUCKS

John A. Draxler, assistant chief engineer and service manager of Elwell-Parker Electric Co., lists important points for consideration when selecting gas or electric power for industrial trucks in the October issue of the firm's external house organ, *The Lift*.

Points are divided into cost factors and operational factors. The article compares average hourly operating costs of gas and electric trucks, average down time, continuous operation on long, steep ramps, operations involving frequent starts and stops and performance on hauls of more than 850 feet.

Information is based on case studies from plants using both types of industrial trucks. Copies of the complete report are available from Elwell-Parker Electric Co., Dept. PVP, 4205 St. Clair Ave., Cleveland 3, Ohio.

CYCLOHEXANOL

Technical Bulletin I-20 on "Naxol" (Cyclohexanol) has been issued by National Aniline Division, Allied Chemical & Dye Corp., Dept. PVP, 40 Rector St., New York 6, N.Y.

The 32-page bulletin is said to contain the most complete data to be assembled on the chemical intermediate. It contains 10 pages of physical and chemical properties, and describes and illustrates all principle reactions.

Also included are 11 pages of suggested uses, and a comprehensive bibliography of 266 references.

CALENDAR OF EVENTS



Dec. 2-6. 26th Exposition of Chemical Industries, Coliseum, New York City.

Dec. 9-11. Chemical Specialties Manufacturers Assoc. Annual Meeting, Hollywood Hotel, Hollywood Beach Hotel, Hollywood Beach, Fla.

Jan. 22-24, 1958. 31st Annual Meeting of Assoc. of Soap & Glycerine Producers, Waldorf-Astoria Hotel, New York, N. Y.

Production Club Meetings

Baltimore, 2nd Friday, Park Plaza Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.

Cincinnati — Oct., Dec., Mar., May, Hotel Alms.

Dayton — Nov., Feb., April Suttmilers.

Columbus — Jan., June, Sept., Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 1st Thursday after 2nd Monday, Melrose Hotel.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, 3rd Monday, Sabella's Restaurant, San Francisco. Houston, Monday prior 2nd Tues-

day, Ship Ahoy Restaurant.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, University Club, Boston.

New York, 1st Thursday, Brass Rail, 100 Park Ave.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, 3rd Thursday, Washington Athletic Club, Seattle, Wash.

Philadelphia, 3rd Wednesday, Philadelphia Rifle Club.

Pittsburgh, 1st Monday, Gateway Plaza, Bldg. 2.

Rocky Mountain, 2nd Wednesday, Republican Club, Denver, Colo.

St. Louis, 3rd Tuesday, Kings-Way Hotel.

Southern, Annual Meetings Only. Toronto, 3rd Monday, Oak Room, Union Station.

Western New York, 1st Monday, 40-8 Club, Buffalo.

ORGANIC CHEMICALS

Now available is the 1958 "Physical Properties" booklet prepared by Union Carbide Chemicals Co., Dept. PVP, 30 E. 42nd St., New York 17, N.Y.

The 28-page booklet is a guide to the firm's products and services. Latest physical property data is presented on more than 350 synthetic organic chemicals.

Featured are 50 new chemicals introduced by the company since the previous edition. Viscosity index improver D and Crag Sevin experimental herbicide are two of the new products described in the section on chemicals for special applications.

Chemicals are arranged by related chemical groups with condensed application data for easy reference. An alphabetical index is also included.

ANTIFOAM

An information sheet describing the properties and applications for Hodag Antifoam TBX is available from Hodag Chemical Corp., Dept. PVP, 7247 North Central Park, Chicago 45, Ill.

The information sheet also includes details on ordering, shipping and shipping containers.

INERT GAS SYSTEM

A bulletin outlining an inert gas system has been made available by Gas Atmospheres, Inc., Dept. PVP, 20011 West Lake Rd., Cleveland 16, Ohio.

The bulletin includes flow charts and cost analyses of the system, and depicts typical installations. The four-page, two-color publication is designated Bulletin I-457.

ACRYLIC LATEX PAINTS

A 70-page brochure giving detailed summaries and tables covering findings in an extensive "every climate" test program on acrylic emulsion paints has been published by Rohm & Haas Co., Dept. PVP, Washington Square, Philadelphia 5, Pa.

The fourth in a series published annually since acrylic emulsions were introduced in 1953, the brochure is titled "Progress Report Four."

Summaries, photos and extensive tables describe results obtained to date from 3,000 test ex-

posures in Florida, Pennsylvania and Arizona begun in 1952 and 1953. Data from a variety of laboratory-controlled test buildings, and from a systematic study covering a large number of commercial paint applications on buildings in every climatic region of the U.S. and Canada are also presented.

CELLULOSE BUTYRATE

A 75-page study of the chemistry and physical behavior of cellulose acetate butyrate in protective coatings has been published by Eastman Chemical Products, Inc., Chemical Division, Dept. PVP, Kingsport, Tenn.

The study represents a comprehensive summary of laboratory and commercial experience gained by company chemists in more than 27 years of work with the cellulose ester. It includes a thorough discussion of the chemical composition of various types of cellulose acetate butyrate available.

Also discussed are how the chemical modification of the cellulose affects the properties of the resulting product, and how to determine which particular cellulose ester can best serve in a specific application.

The study contains numerous solubility and compatibility charts and tables, and is thoroughly indexed for convenient reference.



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ANNOUNCEMENT

THE 1957 REVIEW OF THE PAINT INDUS-TRY IS OPEN ADVERTISING SPACE RESERVATIONS. PUBLICATION DATE IS FEBRUARY, FOR CLOSING DATES, RATES AND OTHER DETAILS, WIRE WRITE ADVERTISING DEPT., PAINT VARNISH PRODUC-TION. 855 AVE. OF THE AMERICAS, NEW YORK 1, N. Y.

New Books

Flow Coating

By E. A. Zahn, Organic Finishing Engineer, General Electric Co. Published by Research Press, Inc., 137 N. Perry St., Dayton 2, Ohio. Price \$8.00.

Flow Coating explains various industrial painting methods such as dipping. spraying, electrostatic, steam, roller coating, centrifugal, hand spraying, automatic dip and others. The volume presents a direct comparison between flow coating and the above methods.

Among other topics covered are designing the flow coater, evaluation and selection of paint materials for flow coating, solvents for flow coating and the future development of industrial flow coating.

E. A. Zahn spent 25 years in research on industrial paints and application methods. He is the inventor of the Zahn Viscosimeter. He has been associated with General Electric Co. for 25 years.

Dangerous Properties of Industrial Materials

By N. Irving Sax, Nuclear Development Corp. of America. Published by Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y. Price \$22.50.

The 1,467-page volume is the successor to the author's "Handbook of Dangerous Materials," which is a reference work on hazardous properties of chemical compounds and other industrial materials.

The old volume has been rewritten and expanded into the new edition, which contains data on more than 8,500 materials. In addition to information on the hazards of general chemicals and industrial materials, the volume contains safety information in comprehensive text sections.

The author is consultant on industrial safety for Nuclear Development Corp. of America. He was assisted by William B. Harris and John H. Harley of the Atomic Energy Commission, L. J. Goldwater of Columbia University, J. J. Fitzgerald of General Electric Co., and Milton S. Dunn of General Aniline and Film Corp.

Laboratoriumsbuch Fur Die Lack-Und Anstrichmittel Industrie

By Dr. Gerhard Zeidler. Second Edition 1957, Wilhelm Knapp Publisher, Dusseldorf, Western Germany. Price \$7.00. Reviewed from German text by Dr. Max Kronstein, New York University.

The book gives in a concentrated form to the paint and varnish laboratory

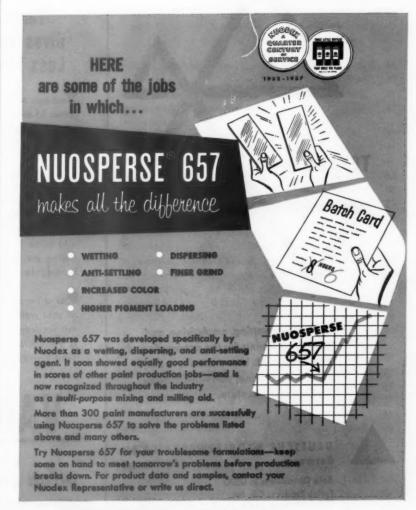
technician a review of general testing methods, such as the determination of the refractive index, the flash and flame points, methods for viscosity measurements and iodine and acid number determinations, with a short description of the required instruments and the essential specifications.

This is followed by test methods for the control tests on raw materials such as oils, solvents, pigments, resins, asphalts and driers. The third section describes the methods of varnish and paint analysis, such as the determination of the solvents, the pigments and the analysis of the vehicle composition.

The next section is concerned with the evaluation of varnish and paint characteristics, such as application characteristics, the determination of fineness of grind, the hardness and so on. Also given are corrosion tests, reflection measurements, etc. Also given are instructions for certain laboratory procedures.

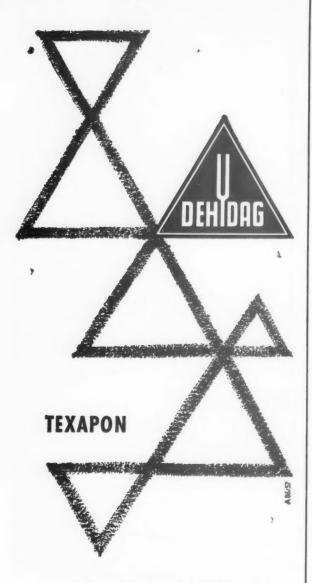
The text is followed by 25 pages of tables on the chemical and physical data for certain oils, resins, solvents and cellulose esters, with tables on dipolmoments, explosive mixtures and other useful data. Finally, literature references are given to important paint test methods and to German paint specifications.

The book is written in the German language and those who can read this will appreciate its concentrated form, in which so many useful laboratory methods are being presented. Readers will be interested in comparing some of the German methods with our methods of testing and of analysis.



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